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MICHIGAN FLORA.

PREPARED FOR THE THIRTIETH ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF AGRICULTURE.

BY W. J. BEAL, M. S., Ph. D., AND C. F. WHEELER, B. S.

AGRICULTURAL COLLEGE, MICHIGAN.

1892.

Robert Smith & Co., State Printers and Binders, Lansing.

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Please acknowledge receipt to
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BY W. J. BEAL, M. S., Ph. D., AND C. F. WHEELER, B. S.

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PREFACE.

The work which forms the basis of this catalogue of Michigan plants is a "Catalogue of the Phænogamous and Vascular Cryptogamous Plants of Michigan, Indigenous, Naturalized and Adventive, by Charles F. Wheeler and Erwin F. Smith," which was published in the tenth annual report of the State Horticultural Society, 1880. Some years since E. F. Smith was appointed by the Department of Agriculture a special agent to investigate the Peach Yellows. The loss of Dr. Smith's assistance in the preparation of this revision is deeply regretted. Much new matter is added in the introduction which, it is hoped, will make the work useful to agriculturists, horticulturists, and all persons interested in floriculture, forestry, etc. The catalogue proper has been revised and corrected as far as possible. With few exceptions, the sixth edition of Gray's Manual has been followed in the arrangement of orders and genera, and in nomenclature. We do not thereby wholly indorse the conservatism of that excellent work, but as this catalogue is prepared mainly for the use of those persons to whom Gray's Botany is perhaps the only accessible book on the subject, we feel justified in using it as a basis of nomenclature.

A large majority of the plants admitted to this list have been collected by the compilers in different parts of the State during the past twenty-five years and, with very few exceptions, the name of no plant is published of which there is not an authentic specimen in some herbarium, public or private.

A large number of species of mosses, liverworts, saprophytic and parasitic fungi have been collected, a separate catalogue of which may be published in the future. Any one finding plants which are not in this list, or new stations for rare plants, should send us notice of the locality, with specimens, if possible.

It is hoped that the publication of this list will stimulate local observers and collectors in all parts of the State to assist in contributing to the

better knowledge of our plants, especially in the matter of geographical distribution. M. S. Bebb has kindly looked over specimens of our Willows. The genus *Carex* has been corrected by Prof. L. H. Bailey. To G. H. Hicks we are greatly indebted for assistance in revision, copying and proof reading.

AGRICULTURAL COLLEGE,
Mich., April 25, 1892.

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MICHIGAN
LAKE MICHIGAN
LAKE ERIE
LAKE ST. CLAIR
G
D
C
A
B
Manistee
Ludington
Sheboygan
Port Washington
Lake Shore Jc.
MILWAUKEE
Grand Haven
Racine
Racine Jc.
Kenosha
Waukegan
Libertyville Jc.
Libertyville
South Haven
Benton Harbor
St. Joseph
Michigan City
CHICAGO
New Buffalo
Berrien Springs
Two Rivers
Two Rivers Jc.
Manitowoc
Plymouth
Mitchell
Lake City
Cadillac
Big Rapids
Hart
Shelby
White Cloud
Fremont
Newaygo
Muskegon
Whitehall
Grand Rapids
Ionia
Greenville
Sparta
Fruitport
Holland
Zeeland
Allegan
Otsego
Kalamazoo
Paw Paw
Hartford
Decatur
Dowagiac
Niles
Cassopolis
Constantine
White Pigeon
Burr Oak
Sturgis
Centreville
Coldwater
Bronson
Quincy
Hillsdale
Reading
Bankers
Adrian
Morenci
Clayton
Lenawee Jc.
Monroe
Monroe Jc.
Dundee
Petersburg
Raisinville
TOLEDO
Ottawa Beach
Douglas
Saugatuck
Fennville
Hopkins
Allegan
Otsego
Plainwell
Bangor
Hartford
Paw Paw
Lawton
Schoolcraft
Vicksburg
Athens
Marcellus
Mendon
Three Rivers
Vandalia
Colon
Sherwood
Union City
Bronson
Quincy
Allen
Jonesville
Litchfield
Jerome
Tecumseh
Clinton
Addison
Brooklyn
Hanover
Manchester
Saline
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Ann Arbor
Pittsfield Jc.
Jackson
Jackson Jc.
Parma
Albion
Marshall
Homer
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Climax
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Portage
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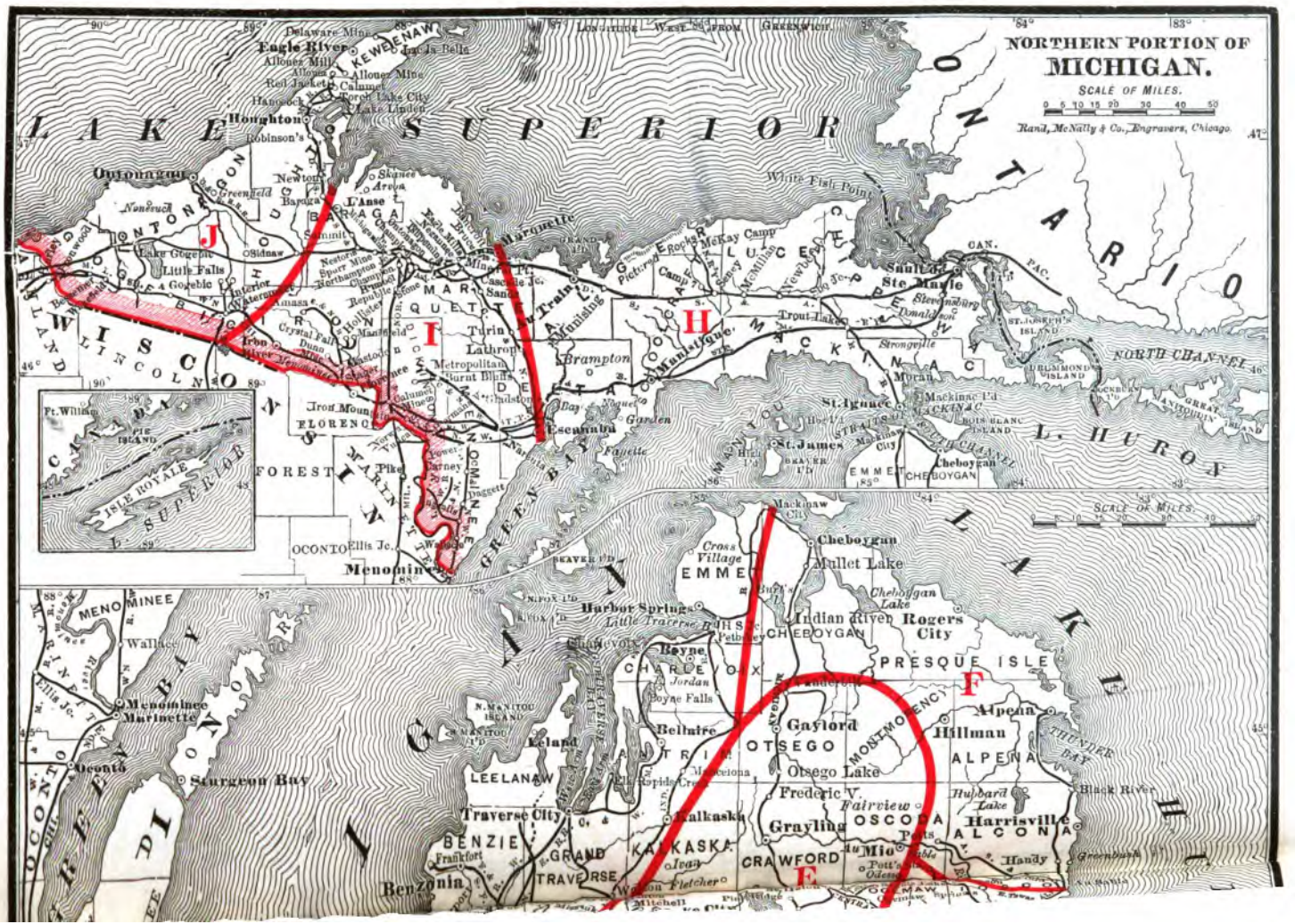
Saugatuck
Douglas
Ottawa Beach
Holland
Zeeland
Grand Haven
Spring Lake
Ferrysburg
Kirk
Muskegon
Muskegon Jc.
Bluffton
North Muskegon
B.R. Junction
Whitehall
Montague
Shelby
Hart
Pentwater
Stetson
Meare
Brookings
Shelby
White Cloud
Fremont
Newaygo
Hoyt
Croton
Muskegon
Bluffton
Muskegon Jc.
Kirk
Ferrysburg
Grand Haven
Spring Lake
Ottawa Beach
Holland
Zeeland


NORTHERN PORTION OF
MICHIGAN.
SCALE OF MILES.
Rand, McNally & Co., Engravers, Chicago.
LAKE SUPERIOR
LAKE HURON
LAKE MICHIGAN
GREEN BAY
ONTARIO
WISCONSIN
Houghton
Eagle River
Ontonagon
Menominee
Marquette
Escanaba
Manistique
Cheboygan
Mackinaw City
St. Ignace
Sault Ste Marie
Mackinac Island
Harbor Springs
Petoskey
Boyne City
Charlevoix
Gaylord
Alpena
Traverse City
Benzonia
Frankfort
Leland
Sturgeon Bay
Oconto
Marinette
Escanaba
Rogers City
Presque Isle
Otsego Lake
Grayling
Harrisville
Black River
Isle Royale
Lake Superior
Lake Michigan
Lake Huron
Green Bay
Mackinac
Straits of Mackinac
North Channel
Thunder Bay
Saginaw Bay
Lake Michigan Ferry
Chicago & West Michigan R'y
Grand Rapids & Indiana R'y
Detroit, Mackinac & Marquette R'y
Mackinac Division
Marquette, Houghton & Ontonagon R'y
Ontonagon & Brule River R'y
Chicago & Northwestern R'y
Peninsula Division
Escanaba & Lake Superior R'y
Escanaba & Lake Michigan R'y
Milwaukee, Lake Shore & Western R'y
Ann Arbor R'y
Detroit & Mackinac R'y
Michigan Central R'y
Canada Atlantic R'y
Canadian Pacific R'y
Grand Trunk R'y
Duluth, South Shore & Atlantic R'y
Lake Shore & Michigan Southern R'y
Toledo, Ann Arbor & North Michigan R'y
Flint & Pere Marquette R'y
Detroit, Grand Haven & Milwaukee R'y
Pere Marquette R'y
Toledo & Ohio Central R'y
Detroit & Cleveland Navigation Co.
Detroit & Cleveland Steam Navigation Co.
Detroit & Buffalo Steamboat Co.
Detroit & Chicago Steamboat Co.
Detroit & Lake Superior Transportation Co.
Detroit & Lake Superior Steamboat Co.
Detroit & Lake Superior Navigation Co.
Detroit & Lake Superior Line
Detroit & Lake Superior Ferry Co.
Detroit & Lake Superior Ferry
Detroit & Lake Superior Ferry

INTRODUCTION.

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HERBARIA CONSULTED.

The following Herbaria have been examined:

The Herbarium of the State Agricultural College is fortunate in possessing the collection of Dr. D. Cooley, an excellent botanist who lived many years in Washington, Macomb county. He was a valued correspondent of Dr. Gray, Dr. Torrey, W. S. Sullivant and other botanists of the early part of this century.

The Herbarium of Dr. D. Clark, of Flint, Mich., has lately become the property of the State Agricultural College. This collection contains sets of Bebbs' Willows, Olney's Carices and many specimens from the earlier American collectors, besides valuable collections of Michigan plants.

The large collection of Prof. C. F. Wheeler, which was destroyed by the burning of the Botanical Laboratory on the 23d of March, 1890.

Prof. V. M. Spaulding kindly permitted us to examine the University Herbarium at Ann Arbor, in which are deposited the collections of Dr. Douglass Houghton, 1838; Miss Mary H. Clark, Miss E. C. Almendinger, Prof. M. W. Harrington, Prof. N. H. Winchell, Geo. L. Ames, M. D., F. E. Wood and others.

The collection of plants belonging to the Kent Scientific Institute at Grand Rapids under the charge of Mr. George D. Sones.

The collection of O. J. Stilwell, which belongs now to Prof. C. A. Davis, of Alma College; also Prof. Davis' collection.

The collection of G. H. Hicks, of the Agricultural College, made in Northern and Central Michigan.

The collection of G. F. Comstock, made in Lenawee County, 1845–'50, now the property of Dr. W. J. Beal.

The collection of Dr. W. J. Beal, now the property of the Michigan Agricultural College.

LOCAL LISTS CONSULTED.

To the following persons we are indebted for lists of the plants growing in their several localities:

To O. A. Farwell, for full list of plants of the Keweenaw peninsula with copious notes and many specimens.

To Prof. H. C. Beardslee, of the University School, Cleveland, O., and Prof. Chas. A. Kofoid, of Oberlin College, for a very complete list of the plants of Cheboygan County, Mich., observed by them during the summer of 1890, with full notes and many specimens.

To Charles K. Dodge, for a collection of the plants growing in the vicinity of Port Huron, with many notes on variation and distribution.

To L. H. Dewey, for a list of the plants in the vicinity of Tecumseh, Mich.

To Prof. W. Hull, for notes and specimens from Albion and vicinity.

To S. P. Orth, for list of plants in the vicinity of Imlay City.

To E. H. Moseley, for a list of plants observed near Union City.

To A. F. Fœrste, for a list of plants observed in the eastern part of St. Clair county.

To Prof. I. N. Mitchell, for a list of plants collected in various parts of the State.

To Prof. C. E. St. John, for a list of plants collected in Mason county and in the southeastern portion of the State.

TOPOGRAPHY.

Michigan is peculiarly situated within the waters of the great lakes, N. latitude 41°45′ to 48°20′; W. longitude, 82°25′ to 90°34′. It is divided into two parts, called the Upper and Lower Peninsulas. The greatest length of the northern portion from east to west is 318 miles, width 30 to 164 miles, forming about two-fifths of the State. The greatest length of the southern portion from north to south is 277 miles and its extreme width 259 miles. The total area is 58,915 square miles, with a coast line of over 1,600 miles.

The general elevation of the Upper Peninsula is 400 to 1,100 feet above Lake Superior, and that of the Lower Peninsula is 400 to 600 feet above the level of Lakes Michigan and Huron.

The two parts of the State present a striking contrast in many respects. The Upper peninsula may be divided into two sections east and west of a line drawn through Marquette which present very marked surface and geological characteristics. The eastern portion slopes northward from its southern border to a watershed and thence falls rapidly to the shores of Lake Superior. This plateau contains many lakes and marshes, also fine forests of pine intermixed with groves of hardwood.

The western part is rugged and hilly, some of the hills rising 1,000 to

1,200 feet. In the extreme northwest are ranges which form the copper region; the central range extends from Keweenaw point across to the Wisconsin line; on either side are the Porcupine mountains and the copper range proper.

South and east of the copper range lies the iron range of Marquette and Iron counties. The eastern portion of this peninsula is underlaid with stratified rocks belonging to the Silurian period, while the western part is occupied by the copper bearing rocks and those of the Huronian period. Glacial drift covers deeply a large portion of both the eastern and western sections.

The Lower Peninsula is generally level or rolling, sloping up in its northern portion to a central ridge or watershed which extends nearly northeast and southwest, the highest part of which, in Otsego county, is 1,100 feet above the lake level.

The shores along the west side of this peninsula are generally bold bluffs which are constantly wearing away, while on the Huron shore they are low and extending by additions of earth cast up by the waves.

The rivers are small but their number is great, and these, with the 5,000 lakes scattered along the watersheds of the State abundantly water all parts of it.

Dr. C. Rominger, a former State Geologist, writes of the geology of the Lower Peninsula as follows: "It forms the center-point of an oceanic bay which seems to have existed without any important alteration in its limits, from the beginning of the Silurian period to the end of the Carboniferous time. We find within the space supposed to have been the bay an uninterrupted series of marine deposits, following each other in the greatest regularity of superposition, which represent all the known formations deposited on this continent from the Silurian period on to the coal formation." The entire surface of the peninsula is covered deeply with glacial drift, consisting of sand, gravels and clays variously intermixed.

The topographical outlines of the Lower Peninsula are due to the joint action of moving ice and flowing water during and following the glacial period.

Beginning in Presque Isle county the lateral moraine of the Huron glacier passes southwest near the line between Montmorency and Alpena counties, thence south by west through Oscoda, Roscommon and Clare, meeting in Mecosta county, the east lateral moraine of Lake Michigan. These join and pass in a southwest direction through Kent, Barry, Kalamazoo and St. Joseph counties. The Saginaw bay branch of the Huron glacier unites with the Huron glacier proper, and forms a lateral moraine beginning in Huron county, passing through Sanilac, Lapeer, Oakland, Livingston and portions of Jackson, Washtenaw and Hillsdale counties. This peninsula is divided by these moraines into certain more or less clearly marked floral regions.

On the map ten regions have been roughly outlined. They are designated by the first ten letters of the alphabet. The following lists of plants are characteristic of the different regions:

A. Southeastern Littoral Region.

Acerates viridiflora, Ell. Green Milkweed.
Agrimonia parviflora, Ait. Small-flowered Agrimony.
Allium Schœnoprasum, L. Chives.
Castanea sativa, Mill., var. *Americana*, Gray. Chestnut.
Dalibarda repens, L.

Dentaria maxima, Nutt. Large Toothwort.
Draba nemorosa, L. Whitlow-Grass.
Eleocharis equisetoides, Torr. Spike-Rush.
Fimbristylis capillaris, Gray. Sedge.
Fuirena squarrosa, Michx., var. *hispida*, Chapm. Umbrella-Grass.
Gaura biennis, L. Gaura.
Gentiana puberula, Michx. Gentian.
Gentiana Saponaria, L. Soapwort Gentian.
Heuchera Americana, L. Common Alum-root.
Juncus filiformis, L. Rush.
Juncus Greenii, Oakes and Tuckerm. Rush.
Juncus Vaseyi, Engelm. Rush.
Ludwigia alternifolia, L. Seed-Box.
Ludwigia sphærocarpa, Ell. False Loosestrife.
Myrica cerifera, L. Bayberry. Wax-Myrtle.
Pentstemon lævigatus, Solander, var. *Digitalis*, Gray. Beard-tongue.
Quercus palustris, Du Roi. Swamp Spanish or Pin Oak.
Ranunculus ambigens, Watson. Water Plantain Spearwort.
Rosa setigera, Michx. Climbing or Prairie Rose.
Rubus odoratus, L. Purple Flowering Raspberry.
Scirpus maritimus, L. Sea Club-Rush.
Scleria verticillata, Muhl. Nut-Rush.
S. triglomerata, Michx. Nut-Rush.
Valeriana edulis, Nutt. Valerian.
Valerianella radiata, Dufr. Corn Salad. Lamb-Lettuce.
Vernonia fasciculata, Michx. Iron-Weed.
Zannichellia palustris, L. Horned Pondweed.

B. South Central Region.

Actinomeris squarrosa, Nutt.
Æsculus glabra, Willd. Fetid or Ohio Buckeye.
Amorpha canescens, Nutt. Lead-Plant.
Asclepias obtusifolia, Michx. Milkweed.
Asclepias verticillata, L. Milkweed.
Aster sericeus, Vent. Aster.
Baptisia leucantha, Torr. & Gray. False Indigo.
Cacalia tuberosa, Nutt. Tuberous Indian Plantain.
Commelina Virginica, L. Day Flower.
Coreopsis palmata, Nutt. Coreopsis.
Desmodium Illinoense, Gray. Tick-Trefoil.
Eryngium Yuccæfolium, Michx. Button Snake-root.
Gaura biennis, L.
Gerardia auriculata, Michx.
Heliopsis lævis, Pers. Ox-Eye.
Houstonia purpurea, L., var. *ciliolata*. Gray.
Liparis liliifolia, Richard. Twayblade.
Onosmodium Carolinianum, D. C. False Gromwell.
Phlox bifida, Beck. Phlox.
Polygala cruciata, L. Milkwort.
Pogonia pendula, Lindl.
Pogonia verticillata, Nutt.
Ruellia strepens, L.
Silphium laciniatum, L. Rosin-weed. Compass-Plant.
Silphium trifoliatum, L. Rosin-weed.
Verbena angustifolia, Michx. Vervain.
Verbena bracteosa, Michx. Vervain.
Zizia cordata, D. C.

C. Saginaw Valley Region.

Anemonella thalictroides, Spach. Rue-Anemone.
Arabis dentata, Torr. and Gray. Rock Cress.
Asimina triloba, Dunal. Common Papaw.
Astragalus Cooperi, Gray. Milk-Vetch.
Brasenia peltata, Pursh. Water-Shield.
Carex sychnocephala, Carey. Sedge.
Cassia Marilandica, L. Wild Senna.
Collinsia verna, Nutt. Innocence.

Cyperus Engelmanni, Steud. Sedge.
Cyperus speciosus, Vahl. Sedge.
Eleocharis olivacea, Torr. Spike-Rush.
Eleocharis pygmæa, Torr. Spike-Rush.
Eleocharis Robbinsii, Oakes. Spike-Rush.
Eleocharis rostellata, Torr. Spike-Rush.
Eragrostis Frankii, Meyer.
Eragrostis pectinacea, Gray.
Erigenia bulbosa, Nutt. Harbinger-of-Spring.
Gerardia purpurea, L. var. *paupercula*, Gray. Purple Gerardia.
Gymnocladus Canadensis, Lam. Ky. Coffee-tree.
Hydrocotyle umbellata, L. Water Pennywort.
Jeffersonia diphylla, Pers. Twin-leaf.
Juncus pelocarpus, E. Meyer. Rush.
Juniperus communis, L. Common Juniper.
Juniperus Virginiana, L. Red Cedar.
Lespedeza reticulata, Pers. Bush-Clover.
Nasturtium lacustre, Gray. Lake Cress.
Poa alsodes, Gray. Meadow-Grass.
Poa flexuosa, Muhl. Meadow-Grass.
Prenanthes racemosa, Michx. Rattlesnake-root.
Quercus imbricaria, Michx. Laurel or Shingle Oak.
Quercus prinoides, Willd.
Ranunculus rhomboideus, Goldie. Crowfoot.
Scirpus Smithii, Gray. Sedge.
Scirpus Torreyi, Olney. Sedge.
Silphium terebinthinaceum, L. Prairie Dock.
Tiedmannia rigida, Coult. & Rose. Cowbane.
Trillium nivale, Riddell. Dwarf White Trillium.
Utricularia resupinata, B. D. Greene. Bladderwort.

D. Southwestern Littoral Region.

Asplenium ebeneum, Ait. Spleenwort.
Calamagrostis longifolia, Hook.
Cyperus Schweinitzii, Torr. Galingale.
Euphorbia polygonifolia, L. Spurge.
Monarda punctata, L. Horse-Mint.
Ranunculus Cymbalaria, Pursh. Sea-side Crowfoot.
Sabbatia angularis, Pursh.
Salix adenophylla, Hook. Willow.
Smilax rotundifolia, L. Greenbrier.
Viburnum prunifolium, L. Black Haw.
Woodwardia angustifolia, Smith. Chain-Fern.

E. North-Central Region.

Calypso borealis, Salisb.
Carex adusta, Boot.
Carex Houghtonii, Torr.
Carex Schweinitzii, Dewey.
Carex Saltuensis, Bailey.
Ceanothus ovatus, Desf. New Jersey Tea. Red-root.
Corydalis glauca, Pursh. Pale Corydalis.
Dracocephalum parviflorum, Nutt. Dragon Head.
Eriophorum alpinum, L. Cotton Grass.
Goodyera Menziesii, Lindl. Rattlesnake-Plantain.
Goodyera repens, R. Br. Rattlesnake-Plantain.
Habenaria obtusata, Richardson. Rein-Orchis.
Kalmia angustifolia, L. Sheep Laurel. Lambkill.
Krigia Virginica, Willd. Dwarf Dandelion.
Linaria Canadensis, Dumont. Toad-Flax.
Lonicera hirsuta, Eaton. Hairy Honeysuckle.
Lonicera oblongifolia, Muhl. Swamp Honeysuckle.
Mimulus Jamesii, Torr. Monkey-flower.
Moneses grandiflora, Salisb. One-flowered Pyrola.
Physalis grandiflora, Hook. Ground Cherry.
Pinus Banksiana, Lambert. Jack, Scrub or Gray Pine.
Pinus resinosa, Ait. Red or Norway Pine.
Potentilla tridentata, Ait. Three-toothed Cinquefoil.

F. Northeastern Littoral Region.

Campanula rotundifolia, L., var. *arctica*, Lange. Harebell.
Carex Backii, Boot. Sedge.
Carex capillaris, L. Sedge.
Carex gynocrates, Wormsk. Sedge.
Carex umbellata, Schkuhr, var. *vicina*, Dewey. Sedge.
Carex communis, Bailey, var. *Wheeleri*, Bailey. Sedge.
Equisetum littorale, Kühlewein. Scouring Rush.
Gentiana linearis, Froel, var. *lanceolata*, Gray. Gentian.
Hudsonia tomentosa, Nutt.
Monotropa Hypopitys, L. Pine Sap. False Beech-drops.
Myrica Gale, L. Sweet Gale.
Nuphar advena, Ait. f. var. *minus*. Morong. Yellow Pond-Lily.
Œnothera, pumila, L. Evening Primrose.
Panicum xanthophysum, Gray.
Pellœa gracilis, Hook. Cliff Brake.
Petasites palmata, Gray. Sweet Coltsfoot.
Phegopteris polypodioides, Fee. Beech Fern.
Polygonella articulata, Meisn.
Polygonum Hartwrightii, Gray. Knotweed.
Ranunculus Flammula, L. var. *reptans*, E. Meyer. Creeping Crowfoot.
Rosa acicularis, Lindl. Rose.
Viola canina, L. var. *puberula*, Watson. Violet.

G. Northwestern Littoral Region.

Acer Pennsylvanicum, L. Striped Maple.
Agropyrum dasystachyum, Vasey.
Ammophila arundinacea, Host. Sea Sand-Reed.
Aphyllon fasciculatum, Gray. Naked Broom-rape.
Artemisia Canadensis, Michx. Wormwood.
Bromus breviaristatus, Thurb.
Claytonia Caroliniana, Michx. Spring Beauty.
Cnicus Pitcheri, Torr. Pitcher's Thistle.
Coreopsis lanceolata, L. Coreopsis.
Dicksonia pilosiuscula, Willd.
Halenia deflexa, Grisebach. Spurred Gentian.
Hypericum Kalmianum, L. Kalm's St. John's-wort.
Juniperus Sabina, L. var. *procumbens*, Pursh. Juniper.
Melica Smithii, Vasey.
Orchis rotundifolia, Pursh. Orchis.
Picea alba, Link. White Spruce.
Primula farinosa, L. Birds-eye Primrose.
Prunus pumila, L. Dwarf Cherry.
Pyrus Americana, D. C. American Mountain Ash.
Rosa Engelmanni, Watson. Rose.
Rubus Nutkanus, Mocino. Salmon-berry.
Rumex salicifolius, Weinmann. White Dock.
Salix glaucophylla, Bebb. Willow.
Symphoricarpos racemosus, Michx. Snowberry.
Tanacetum Huronense, Nutt. Tansy.

H. Eastern Upper Peninsula Region.

Aspidium Lonchitis, Swartz. Shield Fern.
Asplenium Trichomanes, L. Spleenwort.
Aster Lindleyanus, T. & G. Lindley's Aster.
Botrychium Lunaria, Swartz. Moonwort.
Botrychium simplex, Hitchcock. Moonwort.
Castilleeia pallida, Kunth, var. *septentrionalis*, Gray. Painted-Cup.
Carex scirpoidea, Michx. Sedge.
Cerastium arvense, L. Field Chickweed.
Drosera linearis, Goldie. Slender Sundew.
Erigeron acris, L. Fleabane.
Erigeron glabellus, Nutt. Fleabane.
Iris lacustris, Nutt. Lake Dwarf Iris.
Lactuca pulchella, D. C. Lettuce.
Lycopodium inundatum, L. Club-Moss.
Parnassia palustris, L. Grass of Parnassus.

Parnassia parviflora, D. C. Grass of Parnassus.
Pellæa gracilis, Hook. Cliff-Brake.
Pinguicula vulgaris, L. Butterwort.
Pyrus sambucifolia, Cham. & Schlecht. Mountain-Ash.
Scirpus sylvaticus, L. var. *digynus*, Boeckl. Bulrush. Club-Rush.
Solidago Houghtonii, Torr. & Gray. Golden Rod.
Woodsia Ilvensis, R. Brown. Fern.

I. MARQUETTE REGION.

Alnus viridis, D. C. Mountain Alder.
Amelanchier alnifolia, Nutt. Service-berry.
Artemisia borealis, Pallas. Northern Wormwood.
Carex Michauxiana, Boeckl. Sedge.
Carex virescens, Muhl., var. *costata*, Dew. Sedge.
Erigeron acris, L. Fleabane.
Erigeron hyssopifolius, Michx. Fleabane.
Juncus stygius, L. Rush.
Mertensia paniculata, Don. Lungwort.
Potamogeton rufescens, Schrader. Pond-weed.
Potamogeton Robbinsii, Oakes. Pond-weed.
Primula Mistassinica, Michx. Primrose.
Scirpus cæspitosus, L. Bulrush.
Trisetum subspicatum, Beauv., var. *molle*, Gray.

J. KEWEENAW REGION.

Adenocaulon bicolor, Hook.
Amelanchier oligocarpa, Roem. Shad-bush. Service-berry.
Anemone parviflora, Michx. Anemone.
Betula glandulosa, Michx. Dwarf Birch.
Carex Crawei, Dewey. Sedge.
Carex exilis, Dewey. Sedge.
Carex livida, Dewey. Sedge.
Comandra livida, Richardson. Bastard Toad-flax.
Collinsia parviflora, Dougl.
Iva Xanthiifolia, Nutt.
Juniperus communis, L., var. *alpina*, Gaud. Juniper.
Listera cordata, R. Brown. Twayblade.
Lonicera cærulea, L. Mountain Fly-Honeysuckle.
Lonicera involucrata, Banks. Honeysuckle.
Phacelia Franklinii, Gray.
Polygonum viviparum, L. Knotweed.
Ranunculus Flammula, L. var. *intermedius*, Gray. Smaller Spearwort.
Rosa Sayi, Schwein. Rose.
Sagina nodosa, Fenzl. Pearlwort.
Salix balsamifera, Barratt. Willow.
Sisymbrium humile, Meyer. Hedge Mustard.
Stellaria borealis, Bigel. Northern Starwort.
Vaccinium myrtilloides, Hook. Bilberry.
Viola Selkirkii, Pursh. Great-spurred Violet.

CLIMATE AND DISTRIBUTION.

"The sinuosities of the several isothermal lines will demonstrate at a glance the peculiar character of the climate of Michigan, and the fact that both in summer and winter, it is better adapted to the interests of agriculture and horticulture, and probably also to the comfort and health of its citizens, than the climate of any other northwestern state. The marked peculiarity of the climate of Michigan in these respects is attributable to the influence of the great lakes by which the state is nearly surrounded. It has long been known that considerable bodies of water exert a local influence in modifying climate and especially in averting frosts, but it has never been expected that Lake Michigan, for instance, impresses upon the climatic character of a broad region an influence truly comparable with that exerted by the great ocean."—WINCHELL.

The following general notes on Climate and Distribution are from the preface to the first edition by E. F. Smith:

"The influence of climate on vegetation may be summed up in a few words. The climate of the Lower Peninsula is not as severe as that of the Upper, nor so even, but is subject to frequent, sudden, and extreme changes of temperature—as great a variation during the winter season as 53° Fahr. in less than 24 hours having been recorded. Such rapid changes more or less affect vegetation, especially the tender branches of cultivated trees, which are sometimes seriously injured. In one or two instances a like effect on our forest trees has been noticed. The annual range of temperature is about 116°, and the annual mean 46°. Of rainfall, including what falls in form of snow, we have, yearly, about thirty inches. Our snowfall is much less, for the same latitude, than that of New York and New England. In the center of the peninsula, we seldom have more than a few inches at a time.

"The proximity of the Great Lakes exerts a marked influence in equalizing the temperature and the effects are marked upon our flora.

"Trees like *Liriodendron Tulipifera*, *Asimina triloba*, *Cercis Canadensis*, *Gleditschia triacanthos*, *Cornus florida*, *Nyssa multiflora*, and *Morus rubra*, which belong to Ohio and Central Illinois, have crept northward, favored by the mild influence of the lake winds, through the central and western part of the Lower Peninsula, often beyond the middle, and the same is true of smaller and less noticeable plants.

"As might be expected from the uniform surface of the peninsula, the flora is much alike throughout. Probably three-fourths of our species are common to all sections, though by no means equally distributed; some being very abundant in one district and rare in another at no great distance. In most cases such change is due to soil rather than to difference in elevation, temperature, or atmospheric moisture.

"The Lower Peninsula is covered with a deep drift of alternating sands, clays, and gravels, and the flora of any section depends chiefly on which of these happens to lie uppermost. With reference to its flora, the peninsula may be roughly divided into two great divisions—the hardwood and the softwood lands; one representing the Appalachian flora, and the other, the Canadian.

"The hardwood country lies south of latitude 43°, and consists of very fertile sand, clay, or loam, mostly cleared of the original forest, and largely cultivated.

"The sandy or stony drift of many river valleys in this section supports a heavy growth of oak, frequently interspersed with walnut and hickory, while the margins of the streams, and the neighboring swamps, abound in soft maples, swamp and chestnut oak, white and black ash, elm, hackberry, sycamore, butternut, and similar trees. Willows, dogwoods, viburnums, and buttonbush, are common shrubs in the swamps; and hazel, hawthorn, wild cherry and plum, June berry, witch-hazel, etc., are abundant on the dryer ground.

"On the uplands, and away from streams, clay, loam, and a peculiar black muck soil supersede the sands and gravels of the valleys. The prevailing timber here is beech and maple and oak forest in about equal proportions. Beech and maple generally grow together, forming magnificent forests of great extent. The best wheat farms are usually found on uplands near streams, where the oak timber gradually shades into beech and maple. Plains of fertile sand covered with a low, or scattering growth

of oak (oak openings) are frequent, and always very desirable for farming purposes.

"Marshes densely covered with tamarack are common in this part of the State, and nourish in their thick shade such plants as *Drosera rotundifolia, Sarracenia purpurea, Rhus venenata, Ribes rubrum, Chiogenes hispidula, Salix candida, Similacina trifolia, Pogonia ophioglossoides* and *Calopogon pulchellus*. Arbor-vitæ, red cedar and black spruce are comparatively rare.

"A similar tract of soil and timber occurs in the upper end of the peninsula, north of a line drawn from Thunder bay west to the head of Grand Traverse bay. This is commonly known as the "Traverse region," and has a flora much like that we have just described, with the exception that some of the southern species disappear, and northern ones begin to take their place, or if found growing further south, here first become frequent. Deep forests of hemlock and yellow birch (*B. lutea*) mixed with a fine, tall growth of striped maple (*A. Pennsylvanicum*) are frequent, having underneath a tangled growth of *Taxus baccata*, var. *Canadensis*, and under all a carpet of *Lycopodium annotinum*. Alternating with these are sandy plains covered with a dense growth of *Vacciniums*, yielding a great abundance of fruit. Sugar maples and basswood are also abundant in this region, and reach an immense size. In fact, it would be difficult to find finer groves of maple in any part of the State.

"The pine country proper lies between the two tracts we have described, and embraces about 15,000 square miles. It is composed largely of sand hills and plains, either scantily furnished with vegetation, or densely covered with pine forest. Argillaceous tracts wooded with beech and maple also occur, like oases in a desert; and swamps abound, with the usual lowland timber. Forests of hemlock spruce are frequent, and there are occasional ridges of oak. Birch (*B. lutea*) also begins to be a common forest tree, and attains a large size. The usual timber of the barrens is Jack Pine (*P. Banksiana*). Climatic and other influences have combined to produce groves composed entirely of this species of large size and of great beauty, for, instead of being 'a straggling shrub, or low tree' (Gray), it rises, often 50–60 seet, straight and symmetrical. All through this region *Pinus strobus* is the prevailing species and furnishes most of the lumber, but *P. resinosa* is frequent as far south as Clare county, and occurs sparingly in the northern part of Isabella county, which appears to be its southern limit.

"Such is the general character of the sylva down to about latitude 43°, but in the western part of the State, owing perhaps to moister climate, or to favorable soil, hemlock spruce is more abundant, and reaches much farther south, nearly or quite to the Indiana line, and the same is true of white pine.

"The flora of the deep pine woods is interesting, though rather monotonous. Very little undergrowth is found, and their gloomy recesses nourish only such plants as love thick shade. Here the club-mosses (*Lycopodiums*) find a congenial home, and flourish luxuriantly, while *Clintonia borealis* covers the ground. The great round-leaved orchid (*Habenaria orbiculata*), with its tall, greenish spike and twin leaves close to the earth, is also frequent and striking. We shall also meet *Mitchella repens, Maianthemum Canadense, Trillium grandiflorum*, perhaps, and a few ferns, particularly *Asplenium Filix-fœmina* and *Phegopteris Dryopteris*. Other species occur, of course, but not so abundantly. In more

open places, and on ridges, we meet *Rhus aromatica* and *Comptonia* along with wintergreen (*Gaultheria*) and trailing arbutus (*Epigæa*), and are often fortunate enough to find the wax-white, fragrant flower of *Moneses uniflora*, or *Polygala paucifolia*, hiding its shining leaves under a wealth of showy pink blossoms.

"The floral treasures of the pine region lie, however, in its swamps and lake borders rather than in the deep woods. Therein grows *Linnæa borealis* in all its delicate beauty, carpeting the ground, and close at hand, the odd, brown-purple flower of *Cypripedium acaule* and the small yellow blossom of its water-loving relative *C. parviflorum*. In such swamps, or within a stone's throw of them, may be found many other plants of equal interest, such as *Medeola Virginica*, *Ledum latifolium*, *Andromeda polifolia*, *Kalmia glauca*, *Lonicera oblongifolia*, *Cardamine pratensis*, *Gerardia aspera*, *Mitella nuda*, *Eriophorum vaginatum*, etc. On lake margins we shall find *Lysimachia* and the blue *Pontederia* and more rarely, *Nesæa* and *Eleocharis quadrangulata*. The lake itself, most likely, will be full of *Nymphæa*, *Nuphar*, *Utricularias*, and a world of *Potamagetons* and similar water weeds. Shrubby *Vacciniums* line the bluffs, and here and there gleam the white trunks of paper birches against the dark background of pines.

"In the thick-pine country, where the lumberman's ax has let in the sunlight, new plants spring up freely. Here, *Prunus Pennsylvanica* and poplars are frequent, and the blackberry is omnipresent. *Aralia hispida* and *Physalis lanceolata* are also peculiar to such land, and in August *Gnaphalium decurrens* may be seen whitening thousands of acres.

"One seldom beholds a drearier sight than a dead and deserted lumber region. The valuable trees were all felled years ago, and the lumberman moved on to fresh spoils, leaving behind an inextricably confused mass of tree tops, broken logs, and uprooted trunks. Blackberry canes spring up everywhere, forming a tangled thicket, and a few scattering poplars, birches, and cherries serve for arboreal life, above which tower the dead pines, bleached in the weather and blackened by fire, destitute of limbs, and looking at a distance not unlike the masts of some great harbor. Thousands of such acres, repellent alike to botanist and settler, can be seen in any of our northern counties.

"In certain districts considerable beech is found associated with the pine. The soil of such tracts is usually of better quality, and can be rendered productive without much labor. It may be noted that in such cases the pine also grows thriftier and makes better lumber."

TREES AND SHRUBS OF MICHIGAN COMPARED WITH THOSE OF THE REST OF THE WORLD.

Michigan is very rich in trees and shrubs. If we have counted correctly there are 69 species of indigenous trees and three exotics which have escaped from cultivation; 150 native shrubs, 5 exotics spread from cultivation. This gives us 220 indigenous woody plants and 8 exotics which have become naturalized.

To comprehend the relative importance of our trees and shrubs, let us glance at the forests of Great Britain. Great Britain and Ireland contain 121,260 square miles of land, Michigan 60,000, a little less than one-half as much as Great Britain. She has one species of basswood not so good as ours; one maple not over twenty feet high; one cherry from ten to twenty

feet high; one small ash, two elms, two poplars, one beech, which grows very large but not very high; one small white birch, one species of pine, by no means a match for our white pine; a species of oak which sometimes grows to a great size.

Great Britain has about ten species of trees native to her soil. Michigan, with half the territory, has sixty-nine species (ninety if we compare the sizes exactly), nine times as great a variety. Great Britain has no whitewood, no white or red cedar, no walnuts or hickories. Michigan has six species of maple of tree size, a basswood, a whitewood, honey locust, Kentucky coffee tree, three cherries, a pepperidge, five species of ash, a sassafras, three elms, a hackberry, a mulberry, a buttonwood, black walnut, butternut, six hickories, ten oaks, a chestnut, a beech, four tree birches, four willows of tree size, five poplars, three pines, two spruces, one hemlock, a balsam fir, one larch, one arbor-vitæ and a red cedar.

The forests of North America may be divided into two regions, the Atlantic and the Pacific. In the Atlantic region there are 292 species, in the Pacific region 153 species.

In all Europe there are only 85 species of trees.

WHY HAS MICHIGAN SO MANY TREES AND GREAT BRITAIN SO FEW.

This question now very naturally arises: Why has the Atlantic region, including Michigan, so many species of trees and why has Europe so few? Certainly we cannot attribute this difference to a defective soil and climate of Europe, as they now exist, for Europe can grow all sorts of trees now found in the temperate zone, while "Great Britain alone can grow double or treble the number of trees that the Atlantic States can."

The former geological conditions of their continents help to explain all this difference in the distribution of trees to the entire satisfaction of scientists.

Away back in the Tertiary Period the trees of the regions now possessing an arctic climate were such as now thrive in a warm temperate zone like that of Georgia and California. This is well illustrated by the abundant fossil remains of trees. Following this, came a long time when extreme cold prevailed, known as the Glacial Epoch, when snow and ice for most or all of the year extended to the Ohio river. At the approach of cold, the trees slowly retreated southward, as generation followed generation. The plants such as now thrive in southern Michigan, perhaps then extended to what now forms the State of Alabama, while the arctic plants reached Ohio.

As the climate again gradually grew warmer, the trees and other plants slowly migrated northward. Some arctic plants were stranded on the White mountains and in Labrador, where they still remain; others went farther north.

Plants of the cool temperate zone reached Michigan. In a similar manner, during the Glacial Epoch the plants of Europe were driven southward. The Alps, the Pyrenees, the Appenines, the Caucasus, still contain some of these arctic plants which retreated there at the close of the Glacial Epoch. Most of the plants of the warm temperate region had perished and therefore were unable to retreat when the continent became warmer.

I quote the words of Dr. A. Gray, from whom other hints are taken, as found in the American Journal of Science, page 194, 1878. "I conceive that three things have conspired to this loss. First, Europe hardly extend-

ing south of latitude 40°, is all within the limits generally assigned to severe glacial action. Second, its mountains trend east and west, from the Pyrenees to the Carpathians and the Caucasus beyond, near its southern border; and they had glaciers of their own, which must have begun operations, and poured down the northward flanks, while the plains were still covered with forest on the retreat from the great ice wave coming from the north. Attacked both on front and rear, much of the forest must have perished then and there. Third, across the line of retreat of those which may have flanked the mountain ranges, or were stationed south of them, stretched the Mediterranean, an impassable barrier."

"Greenland may be referred to, by way of comparison, as a country which, having undergone extreme glaciation, bears the marks of it in the extreme poverty of its flora, and in the absence of the plants to which its southern portion, extending six degrees below the arctic circle, might be entitled. It ought to have trees, and might support them. But since destruction by glaciation, no way has been open for their return."

"In the American continent the mountains run north and south. The trees, when touched on the north by the on-coming refrigeration, had only to move their southern border southward, along an open way, and there was no impediment to their due return. So our lines have been cast in pleasant places, and the goodly heritage of forest trees is one of the consequences."

FLORA OF THE JACK-PINE PLAINS.

The plants of this region are all found in one or more of the regions previously enumerated.

The soil of these plains is mainly sand of considerable depth which dries out quickly after a rain, and is then especially liable to be burned over, the burning often destroying every living plant above the surface of the soil. In this way, by repeated burning, much of the vegetable matter is removed, leaving the surface soil thin.

The following seventy species of plants are almost certain to be found in considerable quantity on any extended area of Jack-pine plains:

a. THOSE MOST COMMON.

Amelanchier Canadensis, var. *oblongifolia*, Torr. & Gray. Dwarf June-Berry.
Andropogon furcatus, Muhl. Finger, or Beard-Grass.
Andropogon scoparius, Michx. Beard-Grass.
Arctostaphylos Uva-ursi, Spreng. Bearberry.
Aster lævis, L. Aster.
Carex Pennsylvanica, Lam. Pennsylvania Sedge.
Danthonia spicata, Beauv. Wild Oat-Grass.
Epigæa repens, L. Trailing Arbutus.
Erigeron Canadensis, L. Horse-weed.
Gaultheria procumbens, L. Wintergreen.
Myrica asplenifolia, Endl. Sweet Fern.
Oryzopsis Canadensis, Torr. Mountain Rice.
Pinus Banksiana, Lambert. Scrub, or Jack-pine.
Populus tremuloides, Michx. Aspen.
Prunus Pennsylvanica, L. f. Wild Red, or Pin Cherry,
Prunus pumila, L. Sand Cherry.
Prunus Virginiana, L. Choke-Cherry.
Pteris aquilina, L. Brake. Eagle Fern.
Quercus coccinea, Wang. Scarlet Oak.
Quercus tinctoria, Bartr. Black Oak.
Rumex Acetosella, L. Sheep Sorrel.

Salix humilis, Marsh. Low, or Prairie Willow.
Solidago nemoralis, Ait. Golden-rod.
Vaccinium Canadense, Kalm. Low Blueberry.
Vaccinium Pennsylvanicum, Lam. Dwarf Blueberry.
Vaccinium vacillans, Solander. Low Blueberry.

b. THOSE LESS FREQUENT.

Agrostis scabra, Willd. Hair-Grass.
Antennaria plantaginifolia, Hook. Plantain-leaved Everlasting.
Apocynum androsæmifolium, L. Dogbane.
Aralia hispida, Vent. Bristly Sarsaparilla.
Campanula rotundifolia, L. Bluebell. Harebell.
Ceanothus Americana, L. New Jersey Tea.
Comandra umbellata, Nutt. Bastard Toad-flax.
Cnicus pumilus, Torr. Low Thistle.
Convolvulus spithamæus, L. Low Bindweed.
Diervilla trifida, Mœnch. Bush Honeysuckle.
Erigeron strigosus, Muhl. Daisy Fleabane.
Festuca ovina, L. Sheep's Fescue.
Fragaria Virginiana, Mill., var. *Illinoiensis*, Gray Strawberry.
Gaylussacia resinosa, Torr. & Gray. Black Huckleberry.
Gnaphalium decurrens, Ives. Everlasting.
Helianthemum Canadense, Michx. Frost-weed.
Helianthus divaricatus, L. Wild Sunflower.
Helianthus occidentalis, Walt. Wild Sunflower.
Hieracium venosum, L. Rattlesnake-weed.
Houstonia purpurea, L., var. *longifolia*, Gray. Houstonia.
Kœleria cristata, Pers. Kœleria.
Krigia amplexicaulis, Nutt. Dwarf. Dandelion.
Liatris cylindracea, Michx. Blazing Star.
Lycopodium complanatum. L. Ground-Pine.
Lithospermum hirtum, Lehm. Hairy Puccoon.
Maianthemum Canadense, Desf.
Melampyrum Americanum, Michx. Cow-Wheat.
Monarda fistulosa, L. Wild Bergamot.
Œnothera biennis, L. Evening Primrose.
Panicum depauperatum, Muhl. Panic-Grass.
Panicum dichotomum, L. Panic-Grass.
Pinus resinosa, Ait. Norway, or Red Pine.
Pinus Strobus, L. White Pine.
Polygala polygama, Walt. Pink Polygala.
Populus grandidentata, Michx. Large-toothed Aspen.
Potentilla Canadensis, L. Five-Finger. Cinque-foil.
Potentilla tridentata, Ait. Three-toothed Cinque-foil.
Quercus alba, L. White Oak.
Rubus Canadensis, L. Dewberry.
Rubus hispidus, L. Dewberry.
Rudbeckia hirta, L. Cone-flower.
Solidago juncea, Ait. Golden Rod.
Viola canina, L., var. *puberula*, Wats. Violet.
Viola pedata, L. Bird-foot Violet.

The above list consists of representatives of twenty-seven families, of fifty-four genera, and of seventy species.

The families of plants best represented on the plains are the *Rosaceæ* by nine species, *Compositæ* by fifteen species, *Ericaceæ* by seven species, and *Gramineæ* by nine species.

The following large and prominent families of the State are not represented in the list given above: *Ranunculaceæ*, *Cruciferæ*, *Caryophyllaceæ*, *Saxifragaceæ*, *Umbelliferæ*, *Orchidaceæ*.

Most remarkable of all is the absence of any *Leguminosæ*, though the family contains 6,500 species and is second in size only to the Compositæ. The *Leguminosæ* is represented in the State by 47 native species and varieties.

The number of biennials given in this list is remarkably small, only two, and there are no annuals in it. Sixty-eight out of seventy are perennials and most persistent plants well adapted by long, deep roots and rootstocks to live in poor soil which is subject to severe droughts. Most of them are admirably adapted to survival after a severe fire has burned over the ground and killed the tops of the plants.

PLANTS PECULIAR TO THE PRAIRIES.

The following plants are peculiar to the prairie region of the southwestern portion of the State:

Amorpha canescens, Nutt. Lead-Plant.
Asclepias verticillata, L. Milkweed.
Aster sericeus, Vent. Aster.
Baptisia leucantha, Torr. & Gray. False Indigo.
Bouteloua racemosa, Lag. Muskit-Grass.
Coreopsis palmata, Nutt.
Echinacea purpurea, Mœnch. Purple Cone-flower.
Helianthus rigidus, Desf. Sunflower.
Phlox bifida, Beck. Phlox.
Silphium integrifolium, Michx. Rosin-weed.
Silphium laciniatum, L. Compass-plant.
Silphium perfoliatum, L. Cup-plant.
Silphium terebinthinaceum, L. Prairie Dock.

COMPARISON OF THE FLORA OF THE EASTERN AND THE WESTERN SIDES OF THE STATE IN THE LATITUDE OF 44°40'.

On the east side, the latitude in question is near Harrisville in Alcona county. On the west side it is near Frankfort in Benzie county.

It has long been known that the climate of the west shore where the wind sweeps across Lake Michigan was milder in winter, and throughout the year less variable than it is on the east side of the State. So far as observed, the plants of the State which are only found in the vicinity of the great lakes are more abundant in individuals on the west shore.

A. NORTHERN PLANTS FOUND ON THE EAST SIDE OF THE STATE AND NOT ON THE WEST.

Botrychium Lunaria, Swartz. Moonwort.
Botrychium simplex, Hitchcock. Moonwort.
Carex Backii, Boot. Sedge.
Carex capillaris, L. Sedge.
Carex Houghtonii, Torr. Sedge.
Dracocephalum parviflorum, Nutt. Dragon-Head.
Kalmia augustifolia, L. Sheep Laurel. Lambkill.
Kalmia glauca, Ait. Swamp Laurel. Pale Laurel.
Picea alba, Link. White Spruce.
Ribes lacustre, Poir. Swamp Gooseberry.
Sparganium simplex, Huds.

B. SOUTHERN PLANTS FOUND ON THE WEST SIDE OF THE STATE AND NOT ON THE EAST.

Adiantum pedatum, L. Maiden Hair Fern.
Acer dasycarpum, Ehrh. Silver Maple.
Rubus occidentalis, L. Black Raspberry.
Sambucus Canadensis, L. Common Elder.
Sassafras officinale, Nees. Sassafras.
Ulmus fulva, Michx. Red Elm.
Ulmus racemosa, Thomas. Rock Elm.

This list is doubtless incomplete, but so far as it goes it sustains the prevailing notion that the west side of the State has the milder climate. We might be able to see why silver maple, sassafras, black raspberry, red elm

and rock elm thrive on the west shore and not on the east, but we are unable to see why the northern plants found on the east shore should not be found on the west shore. Perhaps there is some other reason than the difference of climate of the present day.

PLANTS SUPPOSED TO HAVE IMMIGRATED FROM THE NORTHEAST.

Calypso borealis, Salisb.
Clintonia borealis, Raf.
Equisetum litorale, Kühlewein.
Eriocaulon septangulare, Withering. Pipewort.
Selaginella spinosa, Beauv.
Spiranthes Romanzoffiana, Cham. Ladies' Tresses.
Trillium erectum, L. Wake Robin.
Trillium erythrocarpum, Michx. Painted Trillium.

PLANTS SUPPOSED TO HAVE IMMIGRATED FROM THE NORTH AND WEST.

Adenocaulon bicolor, Hook.
Anemone parviflora, Michx. Anemone.
Artemisia Ludoviciana, Nutt. Mugwort.
Bromus breviaristatus, Thurber. Brome Grass.
Castilleia pallida, Kunth., var. *septentrionalis*, Gray. Painted Cup.
Drosera linearis, Goldie. Sundew.
Echinacea angustifolia, DC. Purple Cone-flower.
Euphorbia serpyllifolia, Pers. Spurge.
Glyceria pallida, Trin.
Iva xanthiifolia, Nutt. Marsh Elder.
Lonicera involucrata, Banks. Honeysuckle.
Mertensia paniculata, Don. Lungwort.
Mimulus Jamesii, Torr. Monkey-flower.
Mimulus moschatus, Dougl. Monkey-flower.
Nasturtium obtusum, Nutt.
Parnassia palustris, L. Grass of Parnassus.
Parnassia parviflora, DC. Grass of Parnassus.
Phacelia Franklinii, Gray.
Polyonum lapathifolium, L., var. *incanum*, Koch. Knotweed.
Potentilla frigida, Vill. Cinque-foil.
Pyrus sambucifolia, Cham. & Schlecht. Mountain Ash.
Ranunculus Flammula, L., var. *intermedius*, Hook. Spearwort.
Rosa acicularis, Lindley. Rose.
Rosa Engelmanni, Watson. Rose.
Rosa Sayi, Schwein. Rose.
Rumex salicifolius, Weinmann. White Dock.
Symphoricarpos occidentalis, Hook. Snowberry.

OVERLAPPING OF NORTHERN AND SOUTHERN SPECIES IN THE GRAND RIVER VALLEY.

NORTHERN SPECIES:

Carex Magellanica, Lam. Sedge.
Carex pauciflora, Lightf. Sedge.
Carex tenuiflora, Wahl. Sedge.
Dracocephalum parviflorum, Nutt. Dragon-head.
Eriophorum vaginatum, L. Cotton-grass.
Lonicera oblongifolia, Muhl. Swamp Fly-Honeysuckle.
Mimulus Jamesii, Torr. Monkey-flower.
Primula Mistassinica, Michx. Primrose.
Symphoricarpos racemosus, Michx., var. *pauciflorus*, Robbins. Snowberry.
Taxus Canadensis, Willd. American Yew. Ground Hemlock.

SOUTHERN SPECIES:

Asimina triloba, Dunal. Papaw.
Carya sulcata, Nutt. Big Shell-bark. King-nut.
Cassia Marilandica, L. Wild Senna.

Cercis Canadensis, L. Red-bud. Judas-tree.
Chærophyllum procumbens, Crantz.
Collinsia verna, Nutt.
Coreopsis trichosperma, Michx., var. *tenuiloba*, Gray. Tickseed Sunflower.
Desmodium Marilandicum, F. Boot. Tick-Trefoil.
Eleocharis equisetoides, Torr. Spike-Rush.
Eleocharis olivacea, Torr. Spike-Rush.
Eleocharis quadrangulata, R. Br. Spike-Rush.
Eleocharis Robbinsii, Oakes. Spike-Rush.
Eleocharis rostellata, Torr. Spike-Rush.
Erigenia bulbosa, Nutt. Harbinger-of-Spring.
Gymnocladus Canadensis, Lam. Ky. Coffee-tree.
Hemicarpha subsquarrosa, Nees.
Liriodendron Tulipifera, L. White-wood. Tulip-tree.
Morus rubra, L. Red Mulberry.
Silphium terebinthinaceum, L. Prarie Dock.
Tradescantiu Virginica, L. Common Spiderwort.
Utricularia resupinata, B. D. Greene. Bladderwort.

PLANTING THE ROADSIDE AND ABOUT THE HOME.

As students and admirers of nature, we are unable to name a single native tree or shrub that is not interesting and, in some important respects, beautiful and worthy of consideration in making a list for ornamental planting, especially on a large estate. For certain places each kind of "tree is just the thing." With a more extended knowledge of these trees, one is usually much less liable to be hampered by fashion. He will not make the same selections as his neighbors and will thereby exhibit more originality in his designs.

In most species there is considerable variation in the modes of growth of different individuals. The student of botany and horticulture is learning never to express surprise at finding or hearing of specimens of any species of our trees or shrubs which have a weeping habit. In like manner, time is almost sure to produce dwarf specimens of every plant, and those with variegated or cut leaves, as well as those with white or double flowers. Testimony regarding variations of this sort is all the time coming in from different sources.

For a complete list of our sixty-nine native species of trees, the reader is referred to page .

For shade trees along the roadside, or in the front yard, in country or city, among our deciduous-leaved trees, the sugar maple (including the black maple) is a general favorite and the one most extensively planted. It is a fashionable tree, producing a dense, clean top, much the shape of a well-built hay stack. Too many trees of this sort, however beautiful they may be, give a monotonous appearance to a yard or roadside.

The American elm, when well grown, is the queen of the deciduous-leaved trees of northern temperate regions, and is often planted. Our numerous species of oaks are too much neglected as ornamental trees, partially, perhaps, because they often hold their dead leaves during winter.

Among evergreens, for general planting, the white pine, arbor-vitæ, hemlock, red cedar and Norway pine, can scarcely be equalled by any species in temperate climates. Well-grown hemlocks have been considered by competent judges to be the finest evergreens in cultivation, while, in many respects, the white pine cannot be excelled.

It should not be forgotten that a very large proportion of foreign trees and shrubs have not proved hardy, or, after a few years, in some respects

fail and become unsightly. In this regard, if we try natives of our own region there is scarcely any risk.

Doubtless the time will come, when the officers of at least some of our rural highways will learn that it is next to vandalism to remove the last vestige of every shrub or small tree along the roadside. They often leave a tree here and there, but these are frequently damaged by the trimming. Groups or thickets of native shrubbery, including vines, untouched by ax or bush-hook, are a great source of delight to a well-trained person, as he views them while passing along the road. As a rule, at present, all bushes and shrubs are considered by the average pathmaster as entirely out of place and not to be tolerated in any well regulated neighborhood. There never was a greater mistake, and the more we talk about it, the sooner we may look for much needed reforms.

"Many of the most attractive highways in the State owe their beauty to the shiftlessness of the pioneers, who allowed a mass of bushes to grow up in the corners of the old worm fences undisturbed for a generation; afterward to be utilized by more thrifty successors in the embellishment of the roadsides. No plantations formed by man are equal in beauty to these irregular masses of trees that are of Nature's planting.

"Occasionally I note an example of the workings of some man's mathematical mind, who has tried to clear out one of these rows, leaving a tree once in so many feet, and thus ruining the effect for all time."—*C. W. Garfield, in Garden and Forest, 1888, p. 149.*

"The Thorns and Dogwoods and Viburnums, the thickets of Elder and Hazel, the Bitter-sweet and Clematis and Moonseed climbing over all—the flora of the world has no more beautiful plants than these and a hundred more which spring up of themselves and flourish until some one with a zeal for 'trimming up' attacks them with grubbing-hoe and brush-hook. And when the vines are stripped from the fences, and the brush all cut, gathered and burned, the roadsides are thoroughly cleared, it is true, but a desolation of rocks and ashes is all that is left in exchange for the fragrance of flowers, the beauty and coolness of green leaves, and the melody of the birds among them.

"It is a comfort to note that road borders of native shrubs are being used more and more in the best park work. Every one of these shrubs would grace a palace garden, and yet when they modestly appear along a rural highway they are mowed down to 'improve the appearance' of the country."—*Garden and Forest, 1889, p. 337.*

PLANTING A GROVE.

Without discussing at present the utility of planting trees for growing timber in Michigan, we can mos. heartily encourage every farmer who has the least inclination that way, to plant on some acre, more or less, one or many specimens of native trees and shrubs of as many kinds as he can secure. When properly attended to, such a piece will prove to be an additional attraction for home. If properly located, it will serve to check the fierce winds which chill the animals in the barn, drift the snows in winter, shake the apples from the trees in summer or lodge the grain before it is ripe.

A part of this acre, or even more, could be planted to chestnuts, hickory nuts, black walnuts, butternuts and hazelnuts.

It will also be interesting to have a part of a country cemetery planted with all the kinds of native trees that can be found.

PLANTING A WILD GARDEN.

"Few have any conception of the great number of really pretty flowers that may be selected from wild places, and cultivated with success in a garden. As a rule, horticulturists have never attempted a selection from our wild flowers as adapted for garden use. The botanist, as a rule, deals with things in a wild state only, and therefore the subject has never been thought of by him.

"Some are looking back with regret to the old mixed-border gardens; others are endeavoring to soften the harshness of the bedding system by the introduction of fine-leaved plants, but all are agreed that a great mistake has been made in destroying all our sweet old border flowers, from tall lilies to dwarf hepaticas, though very few persons indeed have any idea of the numbers of beautiful subjects in this way which we may gather from every northern and temperate clime.

"What is to be done? Every garden should have a mixed border.

"To most people a pretty plant in the wild state is more attractive than any garden denizen. It is free, and taking care of itself, it has had to contend with and has overcome weeds which, left to their own sweet will in a garden, would soon leave very small trace of the plants therein; and, moreover, it is usually surrounded by some degree of graceful wild spray —the green above, and the moss and brambles and grass around.

"There can be few more agreeable phases of communion with nature than naturalizing the natives of countries in which we are infinitely more interested than in those of greenhouse or stove plants.

"It is quite practicable to create aspects of vegetation along our wood and shrubbery walks, and in neglected places, superior to any seen in nature, because we may cull from the place of every northern, temperate and alpine region; whereas in nature comparatively few plants exist wild in a restricted space."—*Garden and Forest.*

In planting and managing a mixed border of native wild plants, or a wild garden or botanic garden, whichever you choose to call it, there is a great opportunity to acquire knowedge of the habits of plants. Some of these lessons may be a surprise. In a small botanic garden at the College, a considerable portion is river bottom of the Red Cedar river. Summer freshets have more than once killed spikenard, ginseng, adder's tongue, burdock, dandelion, catnip, motherwort, houstonia, wild lettuce, May-weed, mallow, broad-leaved plantain and many others not usually found in abundance on river bottoms. Why these were killed and not most of the others we cannot tell.

Some of the asters, goldenrods, hawkweed, great willow-herb, artichokes, lilies, bladder fern, iris, bur-reed, water weed, arrow-head, cat-tail flag, toad-flax, germander, yellow pond-lilies, and others, spread rapidly in every direction, and if not disturbed will soon monopolize all of the unoccupied land. A good many are more modest and spread little, but root deeply as though they had come to stay. Of these, are water-dock, several wild sunflowers, elecampane, rosin-weed, pokeweed, comfrey and horseradish. Many are delicate and make slow progress, perhaps because we do not understand their wants. Such with us have been the beautiful hepaticas, gold-thread, trailing arbutus, wintergreen, cranberry, laurel,

rhododendron, Labrador tea, shin-leaf, pipsissewa, and most others which have broad evergreen leaves. The hot suns in summer, but especially those in March, kill the leaves.

In a garden we have a chance to study the effect of large masses of one species of wild plant. The shape and color of the leaves and the positions assumed by each are very interesting studies. For example, the dark lanceolate leaves of several sorts of wild sunflowers, each bunch five to eight feet in diameter, hang down, overlapping one another in a beautiful manner somewhat like the shingles of a roof. For the back part of a garden in front of a tall fence, a building, or some trees or shrubbery, these plants are appropriate and much more attractive than many suppose.

The large coarse plants of *Silphium perfoliatum*, cup-plant, are almost subtropical in effect.

Wild lettuce has smooth pinnatifid leaves which hang down from the erect stem, which is often ten feet high. Before flowering, this plant is a real beauty.

Wild senna has long, pinnate leaves and racemes of yellow flowers. A mass five feet high and six feet in diameter cannot fail to awaken the admiration of every true florist. When placed together, it is striking to study, by day or night, the change of position of leaves of most leguminous plants, such as the last mentioned, including peas, locust, clovers and the like.

Several of the wild asters and golden-rods, when placed in damp, rich soil, in large bunches which are a trifle isolated, will astonish almost anyone who has never seen them thus situated. The graceful, even outline, the leaves and the flowers are a study.

Let us here call attention to the idea of growing some of our grasses in large unmixed masses. The andropogons, wild sorghum, *Panicum virgatum*, several species of *Elymus* (wild rye), bottle-brush grass, in fact almost every grass we have, and there are sixty or more in almost every neighborhood, are fine ornamental plants.

The horticulturist will be well repaid by a study of the sedges, of which he will find a number that are valuable for use in masses, each sort by itself in bogs or low places.

The fruits of our different species of *Trillium* are quite dissimilar and afford good points for distinguishing them.

In a botanic garden or wild garden, throughout the season, from the first willows to the witch-hazel and gentians, the apiarist can see what his favorite insects visit for nectar and pollen. The mints always attract the bees; they hum and crawl about the flowers of germander, blue-curls, pennyroyal, spearmint, peppermint, watermint, catmint, bugle-weed, horehound, dittany, hyssop, basil, marjoram, thyme, summer savory, calaminth, balm, stone-root, sage, Oswego-tea, bergamot, horsemint, blephilia, gill, dragon-head, cedronella, synandra, self-heals, skullcap, hedge-nettle, dead-nettle and mountain mints. All of these and many more are mints, and they are much benefited by the visits of bees, which are rewarded with nectar for services rendered. One who passes by such plants can scarcely help picking fragments for a nosegay.

The figworts, too, in large numbers are hardly less valuable, and to them belong the mulleins, toad-flax, snap dragon, snakehead, pentstemon, mimulus, and a host of others. The immense sunflower family contains hundreds of plants valuable for bees.

Here the young and enthusiastic entomologists sweep in our insect

friends as well as our insect foes. They learn to look for certain insects about the plants of a certain species, genus, or family.

Here the landscape artist can study the plants with reference to producing certain effects. Some are subtropical, some suitable for bog or pond, some for sunshine all the day long, others only for shade. Some are best in groups of one kind, others are best massed with one or more sorts; some are eccentric, some noble, some clean, some straggling. Plants with tall, slender, or naked stems may be properly planted in or near low bushy ones which will support or cover their nakedness. With some the chief glory lies in their flowers; with others in the foliage. Some are out early in spring, and go to rest during the heat of summer, while others barely get into flower when the frosts of September appear. Some will be well cared for if all the allied hardy species are placed in a ward or group, while others, like the violets, shoot their seeds for a yard or more in every direction and soon become hopelessly mixed.

Some plants are suitable for dry, sunny slopes, others retire to the shade. Study the soil and location of wild plants to learn how to treat them in a wild garden. The following are excellent to hang over the crest of banks in exposed places: Wintergreen, bearberry, trailing arbutus, dwarf blueberries, dwarf June-berry, violets, harebell, wild asters, the sweet goldenrod, anemones, the bushy andropogons and panicums, and the dwarf sedges.

Cheap and unique ornaments are the sprouts of low stumps cut back each spring to near the old roots. For this purpose use any oak, the Juneberry, witch-hazel, the maples, ashes, basswood, poplars, alders, birches or chestnuts.

If once well selected and well started in a wild garden, plants may remain very attractive for a great many years without much attention, save now and then a little thinning of the most vigorous to keep them from overrunning their more retiring neighbors. Considering the outlay, if the taste leads that way, one will get better returns for labor spent in a wild garden than he will from the one neatly shorn near the house.

AUTUMN FOLIAGE.

For reasons which need not here be explained, the leaves of many of our native trees during autumn assume different colors from the usual green of spring and summer. In the autumn of some years, many trees are truly gorgeous, and become the admiration of everyone. To set off these autumn tints to best advantage, some evergreens or deciduous trees are needed which retain their green colors till late in the season.

In planting along the roadside, in parks, cemeteries, or near the home buildings, too little attention is usually given to the selection and arrangement of trees with reference to what pleasure they may afford in autumn. To render the subject more complex and the effects more uncertain, trees of the same species do not all of them assume the same colors at the same time in autumn. Certain trees or parts of trees are more brilliant than others. Different leaves or branches, or different parts of the same leaves of some sumachs will be red, crimson, orange or yellow. The red maples may be orange or gold, crimson or scarlet—and many leaves may contain clear blotches of bright yellow, and scarlet splashed among

the deep green. The soil and degree of moisture, the nature of the season, the age and thriftiness of a tree, all tend to modify its appearance.

To acquire hints as to what trees to set out, and how to arrange them for producing the best effect, one should note the colors assumed in autumn by our trees and shrubs, then like an artist, he can study all the complicated or simple combinations possible.

The favorite views in the case of woody plants will most likely be found along the edge of marshes, or, if viewed at a distance across an open field or a valley, as the trees rise on the hills beyond.

"Everyone has noticed, in the case of the sugar maple, that on some individuals the leaves are all golden, while on others a portion are scarlet, or that sometimes the leaves on a single branch turn scarlet while the remainder of the tree is still green. Individuals of the scarlet maple differ even more than sugar maples in this respect. On some the leaves are pale yellow; on others they are green with scarlet margins; others are brilliantly scarlet. In western Massachusetts there is one tree of this species, now known from one end of the commonwealth to the other, whose leaves turn from green first to deep, dark purple, and then to the most brilliant scarlet. The leaves upon some trees of white ash turn to a deep, bronzy purple, while in others they turn pale yellow.

"If the leaves on a particular branch of a maple tree assume a particular color one year, they will continue to do so, year after year, as long as the branch exists. If the leaves of a certain oak are more brilliant than those of any of its associates, they will continue to be so year after year.

"Planters, therefore, can well select and perpetuate these individuals as the purple beech, pyramidal oak, have been propagated. The nurseryman who will propagate by grafting maples or oaks or elms, selected with reference to autumnal tints of their foliage, will open the way to more effective plantations than have yet been made in this country, and will reap the reward of his intelligence and enterprise. The field, so far as we know, is entirely a new one."—*Garden and Forest, 1888, p. 410.*

Aside from the deep green colors retained till the hard frosts of autumn by many thrifty specimens, most of our cone-bearing trees, known as evergreens, are the most certain to remain green. Some of these should be selected for autumn planting as a background or "setting" for the picture to be produced by trees of different colors.

NATIVE TREES AND SHRUBS SELECTED FOR THE COLOR OF THEIR LEAVES IN AUTUMN.

a. Green.

Abies balsamea, Miller. Balsam Fir. After fifteen years it usually loses its beauty.
Juniperus Virginiana, L. Red Cedar. Becomes brown in winter.
Picea alba, Link. White Spruce.
" *nigra*, Link. Black Spruce. A slow grower.
Pinus Banksiana, Lambert. Jack or Scrub Pine.
" *resinosa*, Ait. Norway or Red Pine. Better than the Austrian.
" *Strobus*, L. White Pine.
Thuya occidentalis, L. Arbor Vitæ. White Cedar.
Tsuga Canadensis, Carr. Hemlock. Needs protection from the strongest winds.

b. Brown.

Fraxinus Americana, L. White Ash.
Myrica asplenifolia, Endl. Sweet Fern.
Prunus Pennsylvanica, L. f. Wild Red Cherry.
Pteris aquilina, L. Brake or Eagle Fern.
Quercus alba, L. White Oak.
Quercus rubra, L. Red Oak.
And many more trees and shrubs.

c. Yellow and Orange.

Acer saccharinum, Wang. Sugar Maple.
" *saccharinum*, Wang., var. *nigrum*, Torr. and Gray. Black Maple.
Amelanchier Canadensis, Torr. and Gray. Service Berry, Shad Bush.
Betula papyrifera, Marshall. Paper or Canoe Birch.
Corylus Americana, Walt. Hazel-nut.
" *rostrata*, Ait. Beaked Hazel-nut.
Fagus ferruginea, Ait. Beech.
Hamamelis Virginiana, L. Witch-hazel.
Larix Americana, Michx. Tamarack.
Populus grandidentata, Michx. Large-toothed Aspen.
" *monilifera*, Ait. Cotton-wood.
" *tremuloides*, Michx. American Aspen.
And others.

d. Scarlet, Crimson, Red.

Acer rubrum, L. Red Maple.
" *spicatum*, Lam. Mountain Maple.
Ampelopsis quinquefolia, Michx. Virginian Creeper. Our most valuable native vine.
Arctostaphylos Uva-ursi, Spreng. Bearberry.
Cornus florida, L. Flowering Dogwood.
Gaultheria procumbens, L. Wintergreen.
Gaylussacia resinosa, Torr. and Gray. Black Huckleberry.
Nyssa sylvatica, Marsh. Pepperidge. Sour Gum.
Quercus coccinea, Wang. Scarlet Oak.
" *rubra*, L. Red Oak.
Rhus copallina, L. Dwarf Sumach.
" *typhina*, L. Staghorn Sumach.
" *venenata*, DC. Poison Sumach.
Rubus Canadensis, L. Dewberry.
" *hispidus*, L. Swamp-Blackberry.
" *villosus*, Ait. High Blackberry.
Vaccinium Canadense, Kalm. Dwarf Blueberry.
" *Pennsylvanicum*, Lam. Dwarf Bluberry.
" *vacillans*, Solander. Low Blueberry.
And many others.

NATIVE SMALL TREES OR SHRUBS DISTINGUISHED FOR THEIR FLOWERS.

Amelanchier alnifolia, Nutt. Service-berry.
" *Canadensis*, Torr. & Gray. June Berry. Shad-bush.
" *oligocarpa*, Roem. Service-berry. Shad-bush.
Cassandra calyculata, Don. Leather-Leaf.
Ceanothus Americanus, L. New Jersey Tea. Red-root.
" *ovatus*, Desf.
Cephalanthus occidentalis, L. Button-bush.
Cercis Canadensis, L. Red-bud. Judas-tree.
Cornus florida, L. Flowering Dogwood.
Cratægus coccinea, L. Scarlet-fruited Thorn.
" *Crus-galli*, L. Cockspur Thorn.
" *punctata*, Jacq.
" *tomentosa*, L.
Hypericum Kalmianum, L. Kalm's St. John's-wort.
" *prolificum*, L. Shrubby St. John's-wort.
Kalmia augustifolia, L. Lambkill. Sheep Laurel. Wicky.
" *glauca*, Ait. Pale Laurel.
Ledum latifolium, Ait. Labrador Tea.
Lonicera ciliata, Muhl. Fly-Honeysuckle.
" *oblongifolia*, Muhl. Swamp Fly-Honeysuckle.
Physocarpus opulifolius, Maxim. Nine-bark.
Potentilla fruticosa, L. Shrubby Cinque-foil.
Prunus Americana, Marshall. Wild Plum.
" *Pennsylvanica*, L. f. Wild Red or Pin Cherry.
" *pumila*, L. Sand Cherry. Dwarf Cherry.
" *serotina*, Ehrh. Wild Black Cherry.
" *Virginiana*, L. Choke-Cherry.

Pyrus Americana, DC. Mountain-Ash.
" *arbutifolia*, L. f. Choke-berry.
" " var. *melanocarpa*, Hook. Choke-berry.
" *coronaria*, L. Wild Crab-Apple.
" *sambucifolia*, Cham. & Schlecht. Elder-leaved Mountain-Ash.
Rosa acicularis, Lind.
" *blanda*, Ait. Early Wild Rose.
" *Carolina*, L. Swamp Rose.
" *Engelmanni*, Watson. Engelmann's Rose.
" *humilis*, Marsh. Low Rose.
" *Sayi*, Schwein. Say's Rose.
" *setigera*, Michx. Climbing or Prairie Rose.
Rubus Nutkanus, Mocino. White Flowering-Raspberry. Salmon-Berry.
" *odoratus*, L. Purple Flowering-Raspberry.
Sambucus Canadensis, L. Common Elder.
" *racemosa*, L. Red-berried Elder.
Spiræa salicifolia, L. Meadow-Sweet.
" *tomentosa*, L. Hardhack. Steeple-Bush.
Viburnum pubescens, Pursh. Downy Arrow-wood.

NATIVE SHRUBS OR TREES DISTINGUISHED FOR THEIR BEAUTIFUL FRUIT.

Celastrus scandens, L. Staff-tree. Shrubby Bitter-sweet.
Clematis Virginiana, L. Virgin's-Bower.
Cratægus coccinea, L. Scarlet-fruited Thorn.
Cratægus tomentosa, L. Hawthorn.
Euonymus Americanus, L. var. *obovatus*, Torr. and Gray. Trailing Strawberry Bush.
Euonymus atropurpureus, Jacq. Waahoo. Burning-Bush.
Ilex verticillata, Gray. Winterberry. Black Alder.
Lonicera, Seven species.
Menispermum Canadense, L. Moonseed.
Nemopanthes fascicularis, Raf. Mountain Holly.
Pyrus Americana, DC. Mountain Ash.
" *sambucifolia*, Cham. and Schlecht. Mountain Ash.
Rhus glabra, L. Smooth Sumach.
" *typhina*, L. Staghorn Sumach.
Rosa. Six species.
Sambucus racemosa, L. Red-berried Elder.
Sassafras officinale, Nees. Sassafras.
Symphoricarpos occidentalis, Hook. Wolfberry.
" *racemosus*, Michx. Snowberry.
Taxus Canadensis, Willd. Ground Hemlock. American Yew.
Xanthoxylum Americanum, Mill. Prickly Ash.

A LIST OF NATIVE TREES AND SHRUBS DISTINGUISHED FOR THEIR SHOWY OR BRILLIANT COLORED BARK.

Acer Pennsylvanicum, L. Striped Maple.
" *rubrum*, L. Red Maple.
" *spicatum*, Lam. Mountain Maple.
Betula papyrifera, Marsh. Paper or Canoe Birch.
Cornus sericea, L. Silky Cornel. Kinnikinnik.
" *stolonifera*, Michx. Red-osier Dog-wood.
Negundo aceroides, Moench. Box-elder.
Platanus occidentalis, L. Buttonwood. Sycamore.
Rubus villosus, Ait. Blackberry.
Salix humilis, Marsh. Low Willow. Prairie Willow.
" *lucida*, Muhl. Shining Willow.
" *petiolaris*, Smith.
Sassafras officinale, Nees. Sassafras.
Smilax hispida, Muhl. Greenbrier.

Young twigs, a year old, of the above species assume brilliant hues in winter, excepting those of buttonwood and paper birch which must be

older. The older stems of striped maple as well as the young ones are attractive.

Shrubs or small trees in which the young stems are brilliant in winter should be cut back every spring.

There are many other interesting phases of bark, leaves, twigs, buds and flowers, familiar to students of nature, but they cannot all be enumerated here.

NATIVE CLIMBING PLANTS.

"The selection of plants to cover bowers, trellises, railings, old trees, stumps, rootwork, etc., suitably, is an important matter, particularly as the plants fitted for these purposes are equally useful for rough rockwork, precipitous banks, flanks of rustic bridges, river-banks, ruins natural or artificial, covering cottages or outhouses, and many other uses in garden, pleasure-ground, or wilderness."—*W. Robinson, in "The Wild Garden."*

These may be divided into five sections according to their method of getting themselves up in the world.

SECTION 1. *Root Climbers.*

Ampelopsis quinquefolia, Michx. Virginian Creeper. American Ivy. Sometimes by roots; but mostly by tendrils.
Rhus Toxicodendron, L. Poison Ivy.

SECTION 2. *Twiners.*

a. Woody Twiners.

Celastrus scandens, L. Climbing Bitter-sweet. Wax-work.
Lonicera glauca, Hill. Small Glaucous Honeysuckle.
" *hirsuta*, Eaton. Hairy Honeysuckle.
Menispermum Canadense, L. Moonseed.

b. Herbaceous Twiners.

Apios tuberosa, Moench. Ground-nut.
Convolvulus sepium, L. Hedge Bindweed.
Dioscorea villosa, L. Wild Yam.
Humulus Lupulus, L. Hop.
Ipomœa pandurata, Meyer. Wild Potato-Vine.
Polygonum cilinode, Michx. Fringe-jointed Polygonum.
" *dumetorum*, L., var. *scandens*, Gray. Climbing Buckwheat.

SECTION 3. *Leaf Climbers.*

Adlumia cirrhosa, Raf. Climbing Fumitory or Mountain Fringe.
Clematis Virginiana, L. Virgin's-Bower.

SECTION 4. *Tendril Climbers.*

Ampelopsis quinquefolia, Michx. Virginian Creeper. Five-leaved Ivy.
Echinocystis lobata, Torr. & Gray. Wild Cucumber.
Smilax hispida, Muhl. Greenbrier.

SECTION 5. *Climbing by recurved Prickles.*

Galium asprellum, Michx. Rough Bedstraw.
Rosa setigera, Michx. Prairie Rose. Climbing Rose.

NATIVE PLANTS WHICH ARE VERY LIGHT COLORED.

a. Glaucous.

Alopecurus geniculatus, L., var. *aristulatus*, Torr. Fox-tail Grass.
Andromeda polifolia, L.
Baptista tinctoria, R. Br. Wild Indigo.
Corydalis glauca, Pursh. Pale Corydalis.

Dicentra Canadensis, DC. Squirrel Corn.
" *Cucullaria*, DC. Dutchman's Breeches.
Kalmia glauca, Ait. Pale Laurel.
Lonicera glauca, Hill. Glaucous Honeysuckle.

b. Clothed with White Hairs.

Amelanchier Canadensis, T. & G., var. *oblongifolia*, T. & G. Service Berry.
Anemone cylindrica, Gray. Long-fruited Anemone.
Anaphalis margaritacea, B. & H. Pearly Everlasting.
Artemisia Canadensis, Michx. Wild Wormwood.
" *Ludoviciana*, Nutt. Western Mugwort.
Antennaria plantaginifolia, Hook. Plantain-leaved Everlasting.
Cnicus altissimus, Willd. Tall Thistle.
" *Pitcheri*, Torr. Pitcher's Thistle.
Gnaphalium decurrens, Ives. Everlasting.
" *polycephalum*, Michx. Common Everlasting.
" *purpureum*, L. Purplish Cudweed.
" *uliginosum*, L. Low Cudweed.
Potentilla Anserina, L. Silver-weed.
" *argentea*, L. Silvery Cinque-foil.

A LIST OF SMALL EVERGREENS.

Antennaria plantaginifolia, Hook. Plantain-leaved Everlasting.
Arctostaphylos Uva-ursi, Spreng. Bearberry.
Aspidium acrostichoides, Swz. Christmas Fern.
" *marginale*, Swz. Shield Fern.
Cassandra calyculata, Don. Leather-Leaf.
Chimaphila maculata, Pursh. Spotted Wintergreen.
" *umbellata*, Nutt. Prince's Pine.
Coptis trifolia, Salisb. Goldthread.
Epigæa repens, L. Trailing Arbutus.
Gaultheria procumbens, L. Creeping Wintergreen.
Hepatica acutiloba, DC. Liver-leaf. Hepatica.
" *triloba*, Chaix. Liver-leaf. Hepatica.
Hudsonia tomentosa, Nutt.
Lechea major, Michx. Pinweed.
" *minor*, L. Pinweed.
Mitchella repens, L. Partridge Berry.
Phlox bifida, Beck.
" *divaricata*, L.
Polypodium vulgare, L. Polypody.
Potentilla tridentata, Ait. Three-toothed Cinque-foil.
Pyrola elliptica, Shin-leaf.
" *rotundifolia*, L. Shin-leaf.
" *secunda*, L. Shin-leaf.
Vaccinium macrocarpon, Ait. Large Cranberry.
" *Oxycoccus*, L. Small Cranberry.
Waldsteinia fragarioides, Tratt. Barren Strawberry.

And many other plants might be added to this list.

BRONZE EVERGREENS.

The leaves of the following evergreens often assume a bronze color in autumn:

Arctostaphylos Uva-ursi, Spreng. Bearberry.
Epigæa repens, L. Trailing Arbutus.
Gaultheria procumbens, L. Creeping Wintergreen.
Rubus hispidus, L. Running Swamp-Blackberry.
Sarracenia purpurea, L. Pitcher-Plant.

Vaccinum Canadense, Kalm. Dwarf Blueberry.
" *macrocarpon*, Ait. Large Cranberry.
" *Oxycoccus*, L. Small Cranberry.
" *Pennsylvanicum*, Lam. Dwarf Blueberry.
" *vacillans*, Solander. Low Blueberry.

To this list, also, other plants might be added.

PLANTS SUITABLE FOR WINTER BOUQUETS.

Antennaria margaritacea, Benth. & Hook. Pearly Everlasting.
Celastrus scandens, L. (fruit). Wax-work. Climbing Bitter-sweet.
Clematis Virginiana, L. " Virgin's-Bower.
Cyperus. Different species, cut young.
Dioscorea villosa, L. (fruit). Wild Yam.
Eriophorum cyperinum, L. Cotton-Grass.
" *lineatum*, Benth. & Hook. Cotton-Grass.
Euonymus Americanus, L., var. *obovatus*, Torr. & Gray. Strawberry Bush.
" *atropurpureus*, Jacq. Wahoo.
Gnaphalium decurrens, Ives. Everlasting.
" *polycephalum*, Michx. Common Everlasting.
Grasses. Some species cut young.
Liatris scariosa, Willd. Blazing-Star.
Staphylea trifolia, L. (fruit). American Bladder-nut.
Solidago. Several species.

NATIVE BOG AND MARSH PLANTS WHICH ARE PROMISING FOR CULTIVATION.

Only a portion of the native plants found in bog and marsh are here included and these are thought to be the best. Plants for this purpose, as a rule, have received very little attention in this country, but, where favorable conditions can be secured, this portion of a garden will give as great satisfaction for the labor bestowed as any.

Acorus Calamus, L. Sweet Flag.
Alopecurus geniculatus, L. var. *aristulatus*, Torr. Foxtail Grass.
Andromeda polifolia, Salisb. Andromeda.
Arethusa bulbosa, L. An orchid.
Asclepias incarnata, L. Swamp Milkweed.
Aspidium cristatum, Swz. Shield Fern.
" *Thelypteris*, Swz. Shield Fern.
Aster Novæ-Angliæ, L. Aster.
" *puniceus*, L. Aster.
Calla palustris, L. Calla.
Calopogon pulchellus, R. Br. An orchid.
Caltha palustris, L. Marsh Marigold.
Calypso borealis, Salisb. An orchid.
Campanula aparinoides, Pursh. Marsh Bellflower.
Cardamine pratensis, L. Cuckoo Flower.
" *rhomboidea*, DC. Spring Cress.
" " var. *purpurea*, Torr. Spring Cress.
Carex. Many species.
Cassandra calyculata, Don. Leather-Leaf.
Chelone glabra, L. Turtle-head. Snake-head.
Chiogenes serpyllifolia, Salisb. Creeping Snowberry.
Clintonia borealis, Raf.
Cnicus muticus, Pursh. Swamp Thistle.
Coptis trifolia, Salisb. Three-leaved Goldthread.
Coreopsis trichosperma, Michx. Tickseed Sunflower.
Cypripedium acaule, Ait. Stemless Lady's Slipper.
" *candidum*, Muhl. Small White Lady's Slipper.
" *parviflorum*, Salisb. Yellow Lady's Slipper.
" *pubescens*, Willd. Larger Yellow Lady's Slipper.
" *spectabile*, Salisb. Showy Lady's Slipper.
Drosera rotundifolia, L. Round-leaved Sundew.
Dulichium spathaceum, Pers.

Eriophorum polystachyon, L. Cotton grass.
Gentiana crinita, Froel. Gentian.
" *quinqueflora*, Lam. Gentian.
" *serrata*, Gunner. Gentian.
Geum rivale, L. Water or Purple Avens.
Glyceria Canadensis, Trin. Rattlesnake Grass.
Habenaria ciliaris, R. Br. Yellow Fringed-Orchis.
" *dilatata*, Gray.
" *fimbriata*, R. Br. Purple Fringed-Orchis.
" *psycodes*, Gray. Purple Fringed-Orchis.
Helenium autumnale, L. Sneeze-weed.
Hibiscus Moscheutos, L. Swamp Rose-Mallow.
Hydrocotyle umbellata, L. Water Pennywort.
Impatiens fulva, Nutt. Spotted Touch-me-not.
" *pallida*, Nutt. Pale Touch-me-not.
Iris versicolor, L. Blue Flag.
Kalmia glauca, Ait. Pale Laurel.
Lathyrus palustris, L. Vetchling.
" " " var. *myrtifolius*, Gray. Vetchling.
Ledum latifolium, Ait. Labrador Tea.
Lobelia cardinalis, L. Cardinal-flower.
" *syphilitica*, L. Great Lobelia.
Lonicera oblongifolia, Muhl. Swamp Fly-Honeysuckle.
Lysimachia quadrifolia, L. Loosestrife.
" *stricta*, Ait. Loosestrife.
" *thyrsiflora*, L. Tufted Loosestrife.
Menyanthes trifoliata, L. Buckbean.
Muhlenbergia glomerata, Trin. Drop-seed.
Osmunda cinnamomea, L. Cinnamon Fern.
" *Claytoniana*, L. Flowering Fern.
" *regalis*, L. Flowering Fern.
Parnassia (either species). Grass of Parnassus.
Pedicularis lanceolata, Michx. Lousewort.
Petasites palmata, Gray. Sweet Coltsfoot.
Phragmites communis, Trin. Reed Grass.
Pinguicula vulgaris, L. Butterwort.
Plantago cordata, Lam. Plantain.
Pogonia ophioglossoides, Nutt. An orchid.
Polygonum amphibium, L. Knotweed.
" *Hartwrightii*, Gray. Knotweed.
Potentilla Anserina, L. Silver-weed.
" *palustris*, Scop. Marsh Five-Finger.
Primula farinosa, L. Bird's eye Primrose.
" *Mistassinica*, Michx. Primrose.
Rudbeckia speciosa, Wend. Cone-flower.
Rumex Britannica, L. Great Water-Dock.
" *verticillatus*, L. Swamp Dock.
Salix candida, Willd. Willow.
" *myrtilloides*, L. Willow.
Sarracenia purpurea, L. Side-saddle Flower. Pitcher-Plant.
Saxifraga Pennsylvanica, L. Swamp Saxifrage.
Scutellaria galericulata, L. Skullcap.
Senecio aureus, L. Golden Ragwort. Squaw-weed.
Smilacina trifolia, Desf. False Solomon's seal.
Solidago Ohioensis, Riddell. Golden-rod.
" *patula*, Muhl. Golden-rod.
" *Riddellii*, Frank. Golden-rod.
" *uliginosa*, Nutt. Golden-rod.
Spartina cynosuroides, Willd. Fresh-water Cord-Grass.
Steironema ciliatum, Raf. Loosestrife.
Symphoricarpus fœtidus, Salisb. Skunk Cabbage.
Vaccinium macrocarpon, Ait. Cranberry.
Valeriana sylvatica, Banks. Valerian.
Viola blanda, Willd. White Violet.
Woodwardia angustifolia, Smith. Chain-Fern.
" *Virginica*, Smith. Chain-Fern.

NATIVE AQUATIC PLANTS MOST WORTHY OF CULTIVATION.

Alisma Plantago, L. Water-Plantain.
Brasenia peltata, Pursh. Water-Shield.
Glyceria fluitans, R. Br. Water Manna-Grass.
Leersia oryzoides, Swz. Rice Cut-Grass.
Lemna minor, L. Duckweed. Duck's-meat.
" *trisulca*, L. Duckweed. Duck's-meat.
Mimulus Jamesii, Torr. James' Monkey-flower.
Nuphar advena, Ait. f. Yellow Pond-Lily. Spatter-Dock.
" " var. *minus*, Morong. Small Yellow Pond-Lily.
Nymphæa odorata, Ait. Sweet-scented Water-Lily. A pink form found in Otsego lake, Otsego county, is especially fine.
Nymphæa reniformis, DC. Tuber-bearing Water-Lily.
Peltandra undulata, Raf. Arrow Arum.
Pontederia cordata, L. Pickerel-weed.
Potamogeton natans, L. Pondweed.
Ranunculus aquatilis, L. var. *trichophyllus*, Gray. White Water-Crowfoot.
" *circinatus*, Sibth. Stiff Water-Crowfoot.
" *multifidus*, Pursh. Yellow Water-Crowfoot.
Sagittaria variabilis, Eng. Arrow-head.
Saururus cernuus, L. Lizard's-tail.
Scirpus fluviatilis, Gray. Bulrush.
Sparganium eurycarpum, Eng. Bur-reed.
Spirodela polyrrhiza, Schleid. Duck's-meat.
Typha latifolia, L. Cat-tail Flag.
" *angustifolia*, L. Narrow-leaved Cat-tail Flag.
Utricularia cornuta, Michx. Bladderwort.
" *vulgaris*, L. Bladderwort.
Zizania aquatica, L. Wild Rice.

A LIST OF NATIVE FERNS PROMISING FOR CULTIVATION.

Most ferns are easily injured by exposure to strong winds, and a large per cent will not thrive when long exposed to direct sunlight. After observing these two points, and the sections under which the ferns are placed, a little thought will enable any one to give most of our native ferns a suitable location and treatment to ensure success.

a. Thriving in sun or shade in poor soil.
Pteris aquilina, L. Eagle Fern. Common Brake.

b. Thriving in cool, rocky places.
Asplenium ebeneum, Ait. Spleenwort.
" *Ruta-muraria*, L. Spleenwort.
" *Trichomanes*, L. Spleenwort.
Aspidium Filix-mas, Swz. Male Fern.
" *fragrans*, Swz. Shield Fern.
Cryptogramme acrostichoides, R. Br. Rock- Brake.
Pellæa gracilis, Hook. Cliff-Brake.
Polypodium vulgare, L. Polypody.
Woodsia Ilvensis, R. Br.
" *Oregana*, D. C. Eaton.

c. Thriving in bogs or swamps.
Aspidium cristatum, Swz. Shield Fern.
" *Noveboracense*, Swz. Shield Fern.
" *Thelypteris*, Swz. Shield Fern.
Woodwardia angustifolia, Smith. Chain-Fern.
" *Virginica*, Smith. Chain-Fern.

d. Thriving in rich woods.
Adiantum pedatum, L. Maidenhair.
Asplenium angustifolium, Michx. Spleenwort.
" *Filix-fœmina*, Bernh. Spleenwort.
" *thelypteroides*, Michx. Spleenwort.

Aspidium acrostichoides, Swartz. Shield Fern.
" *aculeatum*, Swartz, var. *Braunii*, Koch. Shield Fern.
" *Boottii*, Tuckerman. Shield Fern.
" *Goldianum*, Hook. Shield Fern.
" *Lonchitis*, Swartz. Shield Fern.
" *marginale*, Swartz. Shield Fern.
" *spinulosum*, Swartz. Shield Fern.
" " " var. *intermedium*, D. C. Eaton. Shield Fern.
Cystopteris bulbifera, Bernh. Bladder Fern.
" *fragilis*, Bernh. Bladder Fern.
Dicksonia pilosiuscula, Willd.
Onoclea sensibilis, L. Sensitive Fern.
" *Struthiopteris*, Hoffman. Ostrich Fern.
Osmunda cinnamomea, L. Cinnamon Fern.
" *Claytoniana*, L. Flowering Fern.
" *regalis*, L. Flowering Fern.
Phegopteris Dryopteris, Fée. Beech Fern.
" *hexagonoptera*, Fée. Beech Fern.
" *polypodioides*, Fée. Beech Fern.

THE PROCESSION OF FLOWERS.

A. Flowers of April.

In northern climes there is greater interest shown for the flowers of early spring, than for those of equal beauty, which may follow at any other season of the year. After the usual long dreary winter, the first approach of returning plant activity is always welcome.

The naked sticks, so long bare in their brown and gray, are covered with swelling buds. From the dead leaves of last autumn are springing forth hundreds of plants, all making arrangements for the work of the season, in fact they began their work last summer and autumn, so that flowers were all well formed and of considerable size before winter set in. The date of blossoming varies much in different seasons, but in the southern half of the State the following account is applicable:

The pioneer of wild spring flowers is the *Hepatica*, often called liverleaf or blue anemone, the thick evergreen leaf of which resembles a clover leaf in shape with the parts somewhat grown together. In favored sunny slopes, the flowers may often be seen long before the snow leaves the shady banks.

A few inconspicuous weeds are in flower in early April; indeed, flowers may be found at any time during the winter when there is snow to cover the ground.

Alders and birches of the swamps next open their waxy catkins of flowers. How can they tell just when it will do to venture out? How is it that three, four, or more unusually warm days in autumn would not set them all out, when they would perish? They have descended from a long line of hardy ancestors, the injudicious or tenderest ones of which have perished. Foreign trees and herbs are much more likely to be deceived by unusual seasons.

A little later willows are covered with downy spikes, smooth as kittens, soon spreading to woo the bees which seek the nectar and yellow pollen.

The American elm, the rock elm, the red elm, and the red maple all send forth flowers before hanging out their leaves. In swamps or low grounds, skunk-cabbage puts up its fetid bunch of flowers on a fleshy stem as large as one's thumb. In a few places may be found the colt's-foot from Europe, much resembling the dandelion. On low lands in some portions of northern Michigan, may be seen the sweet-scented colt's-foot.

Soon after, the spring beauty with pale rose-colored flowers delicately lined with a deeper hue, shoots up its slender stem between two narrow, thick, fleshy leaves. Its cup-shaped flowers are nourished by a tuber as large as the end of a lady's little finger which is deeply buried in the rich loam of the valley.

The mandrake or May-apple is now raising its buds which soon expand like an umbrella.

The buds of beech, hickory and basswood are swelling every day and are soon too large for their scaly coverings. Two or three species of trillium are conspicuous on the hill side. They may be best admired where they grow, for the odor of wilting trilliums is anything but agreeable.

On dry land through portions of the State, the fragrant sumach, a low straggling shrub is occasionally seen, showing its small yellow flowers. Leatherwood or moosewood is an interesting early bush, not growing abundantly anywhere. It has very soft tender wood, while the bark is very tough.

In shaded places may be found a pale, juicy little flower about the size of your little finger nail, having two long spurs or horns. It is called Dutchman's breeches, from a slight resemblance to those ancient garments. Another flower somewhat like it is called squirrel corn, because some of the underground shoots look like bunches of yellow corn.

About this time watch for two or more grassy-looking plants called sedges, and for the beautiful *Isopyrum.*

On little knolls at the south, or more frequently at the north, may be found the partridge-berry, occasionally carrying some of its red berries through the winter safe and sound from the birds, boys and squirrels. The round, evergreen leaves are about as large as a cent. Wintergreens with thick, bronzed leaves and red berries are attractive for April.

North of the middle portion of the State, the trailing arbutus or May-flower hides its sweet pink and white flowers beneath the dead leaves. Everyone admires this plant. Mosses and evergreen ferns in shady places attract unusual attention at this time of year because of their beautiful green color.

Toothwort and cardamine, two species of each, are out with their white flowers. They are cousins to the cabbage, radish, turnip, mustard and horseradish.

About this time look for several kinds of violets; then come the anemones, one, two, three of them, early, beautiful, delicate. And here come the small white flowers of the mitre-wort, fringed all around the edges like a sweet little night-cap.

True to its time the June-berry or service-berry sends forth its clear white blossoms, somewhat like those of a cherry tree. Late in the month a yellow honeysuckle appears, and the early crowfoots, two or three of them, with glossy petals of golden yellow. A phlox, also, begins to untwist its fragrant petals.

Along wet land, curled under two dull green kidney-shaped leaves, may be found a purple flower hiding itself from view. It is the wild ginger. The dandelion, a thrifty naturalized foreigner, is just showing its yellow heads covered with bees. Let Higginson describe the next: "The Blood-root opens, a name of guilt, and a type of innocence. This fresh and lovely thing appears to concentrate all stains within its ensanguined root, that it may condense all purity in the peculiar whiteness of its petals. It emerges from the ground with each shy blossom wrapt in its own pale-

green leaf, then doffs the cloak and spreads its long petals round a group of yellow stamens. The flower falls apart so early that when in full bloom it will hardly bear transportation, but with a touch the stem stands naked, a bare gold tipped sceptre amid drifts of snow."

With the bloodroot come the lily-like yellow adder-tongues (and the rarer white one). The mints and watercresses are running up their tender shoots and are never more attractive to the eye or palate. But here comes the first of May, and to enumerate more flowers would be to encroach on her treasures.

B. Flowers of May.

We have seen that almost any neighborhood in the southern half of the lower peninsula will contain not far from fifty plants which flower in April. May finds many of these still in their prime, while others have shed their pollen and are ripening seeds. In this month over one hundred species are added to our list of wild plants in flower. We do not think it necessary to attempt a complete list, but a few seem to merit a brief notice. Along the brooks, cowslips are conspicuous, and on dryer soil, the columbine. In May appear the flowers of Sassafras, two gooseberries, two or three currants, a plum, a crab apple, several hawthorns, several violets, an elder, Solomon's seal, three ashes and several oaks. Two species of orchis, rather rare and very curious, have beautiful, fragrant flowers. In the same family is the two-leaved lady's slipper and another that is yellow. Toward the close of the month appear the flowers of black walnut, butternut, buttonwood, some hickories, two raspberries, three blackberries, a geranium, some potentillas, and the flowering dogwood, the last of which at a distance looks as though the dry limbs were covered with snow. These large white petaloid objects, four for each cluster of inconspicuous flowers, are not petals at all, but an involucre. These serve to attract insects to the small flowers between them.

C. Flowers of Summer and Autumn.

By the first of June flowers come thick and fast. The special interest on the approach of spring has long since passed; the work of a busy season on the farm and garden, or study in the school, makes it difficult for most people to find time enough to welcome each new arrival.

In June we find the flowers of the pitcher-plant, the bass-wood, the cone-bearing trees and a large number of others, but this is most emphatically the month for roses, grasses, and the introduced clovers of the field. The rose family is a most valuable one, containing apples, pears, quinces, medlars, service berries, peaches, almonds, apricots, nectarines, plums, prunes, cherries, strawberries, raspberries and blackberries. It may well be called the "fruit" family.

The grass family contains the cereals, Indian corn, wheat, oats, barley, rye, rice, clover, sorghum, broom-corn, millet; also the meadow and pasture grasses, such as Timothy, red top, June grass, fowl meadow-grass, blue joint, buffalo grass, orchard grass, meadow foxtail, the fescues, rye-grass, oat-grass, sweet vernal, Bermuda grass, and many more. It also contains sugar cane and the bamboos. The grass family is king of the food-producing plants of all the earth.

In June, along the east side of central Michigan, may be seen two species of laurels (*Kalmia*), one of which Agassiz used to say was the neatest flower that grew.

In July, among the hosts of plants, may be found the flowers of many of the figworts, including gerardias; also the mints, the sumachs, the St. John's-worts, dogbanes and milkweeds, and the sedges.

August and September are noteworthy for many compositæ, including asters, golden-rods and wild sunflowers. In this procession may be seen the lilies and water lilies, the lobelias, and the weedy amaranths, euphorbias, pigweeds and polygonums.

Some time in October when we find the closed and the fringed gentians in their deep blue, and the slender yellow petals of the witch-hazel, we shall know that the last of the procession of wild flowers of the year has arrived, and that for a long six months we must wait for the beginning of another floral display.

PLANTS INDICATING A FERTILE SOIL.

Acer saccharinum, Wang. Sugar maple, when the wood is solid and of fine quality.
Acer saccharinum, Wang., var. *nigrum*, Torr. & Gray. Black sugar maple.
Adiantum pedatum, L. Maidenhair Fern.
Angelica hirsuta, Muhl. Angelica.
Apios tuberosa, Mœnch. Wild Bean. Ground-nut.
Arisæma triphyllum, Torr. Indian Turnip.
Asplenium angustifolium, Michx. Spleenwort.
" *thelypteroides*, Michx. Spleenwort.
Cassia Marilandica, L. Wild Senna.
Collinsonia Canadensis, L. Rich-weed. Stone-root.
Cratægus tomentosa, L. Hawthorn.
Dentaria diphylla, Michx. Toothwort. Pepper-root.
" *laciniata*, Muhl. Toothwort. Pepper-root.
Dicentra Canadensis, DC. Squirrel Corn.
" *Cucullaria*, DC. Dutchman's Breeches.
Fraxinus Americana, L. White Ash.
" *quadrangulata*, Michx. Blue Ash.
Hydrastis Canadensis, L. Golden Seal.
Hydrophyllum Canadense, L. Waterleaf.
" *Virginicum*, L. Waterleaf.
Juglans cinerea, L. Butternut.
" *nigra*, L. Black Walnut.
Menispermum Canadense, L. Moonseed.
Orchis spectabilis, L. Showy Orchis.
Podophyllum peltatum, L. May-Apple. Mandrake.
Quercus alba, L. White Oak. When well grown.
" *macrocarpa*, Michx. Bur-Oak.
Ribes Cynosbati, L. Prickly Gooseberry.
Rubus occidentalis, L. Black Raspberry.
Scrophularia nodosa, L., var. *Marilandica*, Gray. Figwort.
Taraxacum officinale, Weber. Dandelion.
Tilia Americana, L. Basswood.
Ulmus Americana, L. American Elm.
" *racemosa*, Thomas. Rock Elm.
Uvularia grandiflora, Smith. Bellwort.
Verbena hastata, L. Blue Vervain.

When well grown and of good size, several other trees are indications of good soil.

PLANTS INDICATING A BARREN SOIL.

For these, the reader is referred to the list of plants found on the Jack-pine plains.

TREES VALUABLE FOR TIMBER.

The following list contains the names of sixty-five species and varieties of native woody plants large enough to be called trees. All attempts to arrange them according to value have utterly failed. One kind of tree is most useful for one purpose, and another kind for another purpose. For example, the relative abundance of the fine trees of any species has much to do with their usefulness. Chestnut, red cedar, and black walnut are three very useful kinds of timber, but the trees are now scarce in Michigan. Among the highest for general purposes come white pine, white oak, sugar maple, and white ash.

Abies balsamea, Miller. Balsam. Balm-of-Gilead Fir.
Acer dasycarpum, Ehrh. White or Silver Maple.
" *rubrum*, L. Red Maple.
" *saccharinum*, Wang. Sugar Maple.
" " Wang., var. *nigrum*, Torr. & Gray. Black Sugar Maple.
Æsculus glabra, Willd. Fetid or Ohio Buckeye.
Amelanchier Canadensis, Torr. & Gray. Shad-Bush. June-Berry.
Betula lenta, L. Cherry Birch. Sweet B. Black B.
" *lutea*, Michx. f. Yellow or Gray Birch.
" *papyrifera*, Marshall. Paper or Canoe Birch.
Carpinus Caroliniana, Walt. Blue Beech.
Carya alba, Nutt. Shell-bark Hickory.
" *amara*, Nutt. Bitter-nut.
" *microcarpa*, Nutt. Small fruited Hickory.
" *sulcata*, Nutt. King-nut. Big Shell-bark Hickory.
" *tomentosa*, Nutt. Mocker-nut.
Castanea sativa, Mill., var. *Americana*, Gray. Chestnut.
Celtis occidentalis, L. Hackberry.
Cornus florida, L. Flowering Dogwood.
Cratægus coccinea, L., var. *mollis*, Torr. & Gray. Hawthorn.
Fagus ferruginea, Ait. American Beech.
Fraxinus Americana, L. White Ash.
" *pubescens*, Lam. Red Ash.
" *quadrangulata*, Michx. Blue Ash.
" *sambucifolia*, Lam. Black Ash.
" *viridis*, Michx. Green Ash.
Gleditschia triacanthos, L. Honey-Locust.
Gymnocladus Canadensis, Lam. Kentucky Coffee-tree.
Juglans cinerea, L. Butternut.
" *nigra*, L. Black Walnut.
Juniperus Virginiana, L. Red Cedar.
Larix Americana, Michx. Tamarack. Am. Larch.
Liriodendron Tulipifera, L. Tulip-tree. Whitewood.
Morus rubra, L. Red Mulberry.
Negundo aceroides, Mœnch. Box-Elder. Ash-leaved Maple.
Nyssa sylvatica, Marsh. Pepperidge. Tupelo. Black or Sour Gum.
Ostrya Virginica, Willd. Ironwood. Hop-Hornbeam.
Picea alba, Link. White Spruce.
" *nigra*, Link. Black Spruce.
Pinus Banksiana, Lambert. Jack or Scrub Pine.
" *resinosa*, Ait. Norway or Red Pine.
" *Strobus*, L. White Pine.
Platanus occidentalis, L. Buttonwood. Sycamore.
Populus balsamifera, L. Balsam Poplar.
" *grandidentata*, Michx. Large-toothed Aspen.
" *monilifera*, Ait. Cotton-wood.
" *tremuloides*, Michx. American Aspen.
Prunus serotina, Ehrh. Black Cherry.
Pyrus Americana, DC. American Mountain-Ash.
Quercus alba, L. White Oak.
" *bicolor*, Willd. Swamp White Oak.
" *coccinea*, Wang. Scarlet Oak.

Quercus tinctoria, Bartram. Black Oak.
" *macrocarpa*, Michx. Bur Oak.
" *Muhlenbergii*, Engelm. Chestnut-Oak.
" *rubra*, L. Red Oak.
Salix amygdaloides, Anders. Willow.
" *nigra*, Marsh. Black Willow.
Sassafras officinale, Nees. Sassafras.
Thuya occidentalis, L. White Cedar. Arbor Vitæ.
Tilia Americana, L. Basswood. Linden.
Tsuga Canadensis, Carr. Hemlock.
Ulmus Americana, L. American Elm.
" *fulva*, Michx. Red Elm. Slippery Elm.
" *racemosa*, Thomas. Rock Elm.

THE BEST KINDS OF TIMBER FOR FIREWOOD.

The most prominent and best known are:

Acer saccharinum, Wang. Sugar Maple.
" " " var. *nigrum*, Torr. & Gray. Black Sugar Maple.
Fagus ferruginea, Ait. Beech.

In some regions one or more of the five kinds of hickories are employed. Ironwood is very valuable, though the trees are small. All sorts of trees common in a neighborhood are more or less used for fuel. The heavier the wood, when seasoned, the more valuable it is for fuel.

THE MOST DURABLE KINDS OF TIMBER FOR POSTS OR SILLS.

Castanea sativa, Mill., var. *Americana*, Gray. Chestnut.
Fraxinus quadrangulata, Michx. Blue Ash.
Juglans nigra, L. Black Walnut.
Juniperus Virginiana, L. Red Cedar.
Larix Americana, Michx. Tamarack.
Morus rubra, L. Red Mulberry.
Prunus serotina, Ehrh. Black Cherry.
Quercus alba, L. White Oak.
" *bicolor*, Willd. Swamp White Oak.
" *macrocarpa*, Michx. Bur Oak.
" *Muhlenbergii*, Engelm. Chestnut-oak.
Thuya occidentalis, L. White Cedar.
Tsuga Canadensis, Carr. Hemlock.

In market, white oak, swamp white oak and chestnut-oak are usually indiscriminately called "white oak," although swamp white oak is generally tougher and more durable than white oak. For posts, red cedar is the best, but too scarce to find its way into the market. For railroad ties the oaks above named are much employed, with some use of red oak and black oak, hemlock, white cedar and black ash. Poles for telegraphs, telephones and electric lights consist almost entirely of white cedar. For piles, oak and Norway pine are the favorites. White pine logs are bored, hooped with steel and tarred, and then used for water pipes below ground. White pine, whitewood, and tamarack are bored for pump logs.

FAVORITE KINDS OF TIMBER FOR THE CABINET MAKER.

Black walnut, black cherry, and curly maple are the oldest favorites, while closely following them come white ash, black ash, butternut, white oak, red oak, and black oak. More recently yellow birch has been much employed, and still later American elm and sycamore. Nearly all of the

above are employed as veneers, mostly made by steaming and cutting into thin sheets as the log is made to revolve on its axis. Knots or burls of several trees are much sought for to be made into veneers. Trees of walnut, ash or maple with wavy like patches or blisters are valuable for veneers.

The species of our native trees above named are most used for the exterior or fronts of furniture, for finishing the interior of fine dwellings, and for railway cars, but the timber of a very large number of other species is employed for furniture which is covered with paint or for those parts not exposed to view.

No one, so far as our knowledge extends, has yet taken the pains to employ the wood of some of our rarest trees and shrubs for the purposes noticed under the last heading.

For beauty and originality, we call especial attention to red maple, coffee-tree, honey-locust, large hawthorn, June-berry, dogwood, sassafras, red elm, hackberry, mulberry, ironwood, red cedar, papaw, prickly ash and staghorn sumach.

TIMBER FOR FARM IMPLEMENTS.

Chief among the timbers valuable for this purpose, come white ash, white and swamp-white oak, three or more species of hickory, rock elm, sugar maple, black maple, and Norway pine; while, for certain portions, basswood, whitewood, white pine, and a few others are much employed.

TIMBER VALUABLE FOR LARGE OR SMALL BOATS.

White oak and swamp-white oak and chestnut-oak are almost the only timbers used where hardwood is needed and where it is more or less exposed to moisture. For certain places tamarack is employed. Where solidity is not especially required, white cedar is employed if the timber be much exposed to water. For the upper and interior portions, all kinds of timber are employed which are mentioned as suitable for cabinet work.

KINDS OF TIMBER MOST EMPLOYED FOR BOXES, BASKETS AND BARRELS.

Boxes for holding dry goods and the like are often made of white pine or any other light timber, such as basswood or American elm.

For cheese boxes, peck measures, etc., American elm is steamed and cut into the right shape.

For berry boxes whitewood is the favorite, when steamed and cut into very thin sheets.

For baskets and bottoming cheap chairs, black ash was formerly almost exclusively employed. White oak was also used in like manner for stout baskets, and the twigs of willow were sometimes called into use. More recently "bushel baskets," market baskets and peach baskets have mostly been made of thin strips cut after steaming, from American elm, whitewood, beech, birch, basswood or several other kinds of timber.

Barrels for liquids and flour are mostly made of oak, almost any kind if sound; for salt barrels and wash-tubs, white pine is employed; for butter, white ash is selected as it imparts no disagreeable flavor.

Basswood is much used for heading. For barrel hoops thrifty young trees of hickory, bitternut, white oak, and white ash are the favorites, while American elm is now extensively employed, the pieces being cut and shaped properly while the timber of large logs is steamed till it is soft and spongy.

TIMBER FOR PAPER PULP.

For this purpose the clean logs of aspen, cottonwood, black or white spruce and balsam fir are employed. Tamarack is good only the paper is not very white. More recently several other kinds of timber have been employed with success.

TREES FOR SUGAR.

Probably no experimenters will ever find a method of profitably making syrup or sugar from the sap of any other of our native trees than sugar or rock maple, black maple, and in some cases from red maple, and possibly from box elder.

TREES AND SHRUBS BEST SUITED FOR SCREENS OR WIND-BREAKS.

For this purpose, evergreens are mostly employed. Mixed with evergreens or planted by themselves in dense rows or groups many deciduous-leaved trees and shrubs are useful. Young white oaks and beeches hold many of their leaves during winter and make a very good screen, but they are unsightly at such times. The following are the common names of our best evergreens:

Norway pine, where not too near the dwellings, though the tree is a little coarse.
Red cedar, grows rather slowly and becomes brown in winter.
White cedar, makes a dense though somewhat slow growth, and is a general favorite.
White pine, one of the very best. It may be cut back if desired, thus keeping the trees denser and more stocky.
White spruce. Very good.

We enumerate some of the best deciduous-leaved trees:

American elm,	Black maple,	Pepperidge,	Silver maple,
Aspen,	Black oak,	Red maple,	Sugar maple,
Basswood,	Box elder,	Sassafras,	Tulip tree,
Beech,	Mulberry,	Scarlet oak,	White oak.
Black cherry,			

In selecting shrubs to mix with trees, there is no danger of going amiss. Each possesses some peculiar merit.

Alders, for moist land,	Elders,	Mountain ash,	Virginia creeper,
Bladdernut,	Grape vines,	Mountain maple,	Wild crab,
Bittersweet,	Hazels,	Prickly ash,	Wild plum,
Blue beech,	Hawthorns,	Service berry,	Willows,
Choke cherry,	Honeysuckles,	Sumachs,	Witch hazel.
Dogwoods,	Judas tree,	Viburnums,	

SOME OF OUR WILD FRUITS AND NUTS, WITH SUGGESTIONS CONCERNING THEIR IMPROVEMENT.

Considering the comparatively short length of time that North America has been inhabited by civilized people, the improvement and general cultivation of so large a number of native fruits seems quite wonderful. This list includes all of our blackberries and dewberries, most of our gooseberries, all the hardy grapes, grown in climates like our own, all of our red and yellow plums, all of the best red raspberries and black raspberries and all the most valuable strawberries. All of our cultivated red or white

currants have descended from a small red currant found in Europe which is thought to be identical with one found in wet places in northern Michigan.

Although the improvements in fruits have been much greater during the past two hundred or three hundred years, than during any corresponding period of the world's history, we cannot help wondering what grand results might have been attained had these experiments been continued in North America through 2,000–4,000 years.

The advantages of experimenting with native instead of with foreign plants is shown by the mere fact that they are already adapted to our climate. Much time has been lost in making unsuccessful attempts to acclimatize or to improve foreign fruits.

We know of no attempts in this country to raise seedlings by tens of thousands such as could now be well undertaken by almost any of our experiment stations. The great increase of numbers would increase the probability of sooner obtaining the improvements sought for. In case of apples, pears and quinces this subject has received too little attention, but with strawberries and some of the others requiring little time for finding the results, more experiments have been made. The often repeated recommendations of the late President Wilder in his addresses to members of the American Pomological Society were: "Plant the most mature and perfect seeds of the most hardy, vigorous and valuable varieties; and as a shorter process, ensuring more certain and happy results, cross or hybridize your best fruits."

In this connection, we consider ourselves very fortunate in being able to reproduce portions of a most admirable essay which appeared in the proceedings of the American Pomological Society in 1873. It was written by the late Dr. Asa Gray and has been greatly admired by the comparatively small number who have read it:

"It would be curious to speculate as to what our pomology would have been if the civilization from which it, and we ourselves, have sprung, had had its birthplace along the southern shores of our great lakes, the northern shores of the Gulf of Mexico, and the intervening Mississippi, instead of the Levant, Mesopotamia and the Nile, and our old world had been open to us as a new world, less than four hundred years old.

"Seemingly, we should not have as great a variety of choice fruits as we have now, and they would mostly have been different, but probably neither scanty nor poor. In grapes at least we should have been gainers. Our five or six available species, of which we are now just beginning to know the capabilities, would have given us at least as many choice sorts and as wide a diversity as we now have of pears; while pears would be a recent acquisition, somewhat as our American grapes now are. Our apples would have been developed from *Pyrus coronaria*, and might have equaled anything we actually possess from *Pyrus malus* in flavor though perhaps not in variety, if it be true, as Karl Koch supposes, that the apples of the orchards are from three or four species. At least one of our hawthorns, *Cratægus tomentosa*, in some varieties, bears a large and delicately flavored fruit, evidently capable of increase in size; it might have been in the front rank of pomaceous fruits. In a smaller way our serviceberry would have been turned to good account; our plums would have been the progeny of the *Chicasa*, the beach plum, and our wild red and yellow *Prunus Americana*, which have already shown great capacity for improvement; our cherries might have been as well flavored, but probably

not so large as they now are. But instead of peaches and figs we should be discussing manifold and most luscious varieties of persimmon and papaw, the former probably equal to the *kaki* just acquired from the far east. As to strawberries, gooseberries, and currants, we should have lost nothing and gained something, as we possess several species besides the European types themselves; as to blackberries and raspberries we should have been better off than now, by the earlier development and diversification of our indigenous species. And we might have had all of our finest strawberries a thousand or more years ago, these having come from our American types, *Fragaria Virginiana* with its varieties (which as well as the old world, *F. vesca*, occurs all across the continent), and *F. Chilensis*, which ascends the Pacific coast to Oregon."

Had civilization had its birthplace in America, Dr. Gray believes "our ground-nut (*Apios tuberosa*) would have been the first developed esculent tuber, and would probably have held its place in the first rank along with potatoes and sweet potatoes of later acquisition.

"Among the causes and circumstances which have given to the fruits of temperate climates of the old world their pre-eminence, *opportunity* is one. How many potential fruits of value lie undeveloped in this country we know not, and shall never know. They have lost their opportunity. Necessity, which is the mother of pomology as well as of other inventions, has been fully supplied out of other accessible, and in some cases, no doubt originally, better materials.

"There are some, however, for which evidently 'a good time is coming.' Of these, our wild grapes are foremost. They have such a start already, and seedlings, whether from crosses or otherwise, can be produced and selected and reproduced in so short a space of time, that they will probably have achieved their position when the American Pomological Society holds its centennial celebration.

"Blackberries from *Rubus villosus*, are in a similar case; and if due attention be paid to the low blackberry or dewberry, and to the sand blackberry of New Jersey and farther south, the foundation for a greater diversity of excellent sorts will be laid.

"As to cranberries, already an important staple, increase of size and abundance of production are all that are to be expected. It is easier to bring about improvements in the direction of sweetness than in that of acidity. Huckleberries, also, have probably nearly reached their perfection unassisted.

"A few wild fruits may be mentioned which manifestly have great capabilities, that may or may not be developed in the future. The leading instances in my mind are the persimmon and the papaw. The papaw is wholly distinct from any other fruits we possess of temperate climates. The custard apples of the West Indies give some idea of what might be made of our papaw, when ameliorated by cultivation and close selection from several generations.

"Our American plums, already mentioned, have for many years been in some sort of cultivation, and have improved upon the wild forms; but I suppose they have not been systematically attended to. Their extreme liability to black knot and other attacks renders them, for the present, unpromising.

"Finally, if pomology includes nuts, there is a promising field uncultivated. Our wild chestnuts are sweeter than those of the old world; it would be well to try whether races might not be developed with the nuts

as large as *marrows* or Spanish chestnuts, and without diminution of flavor. If we were not too easily satisfied with a mere choice among spontaneous hickory nuts, we might have much better and thinner shelled ones. Varying as they do excessively in the thickness of the shell and in the size and flavor of the kernel, they are inviting your attention, and promising to reward your care. The butternuts and black walnuts are waiting to have their excess of oil turned into farinaceous and sugary matter, and their shells thinned and smoothed by continued good breeding; when they will much surpass the European walnut.

"All this requires time, almost unlimited time; but it is not for those who are enjoying the fruits which it has taken thousands of years to perfect, to refrain from the good work which is to increase the enjoyments of far future generations."

LIST OF WILD FRUITS, NUTS, ETC.

Amelanchier Canadensis, Torr. & Gray, and varieties. Service-berry.
Asimina triloba, Dunal. Papaw.
Carya alba, Nutt. Shell-bark Hickory.
" *sulcata*, Nutt. Large Shell-bark Hickory. King-nut.
Castanea sativa, Mill., var. *Americana*, Gray. American Chestnut.
Corylus Americana, Walt. American Hazel-nut.
" *rostrata*, Ait. Beaked Hazel-nut.
Fagus ferruginea, Ait. Beech.
Fragaria vesca, L. Alpine Strawberry.
" *Virginiana*, Mill. American Strawberry.
" " " var. *Illinoensis*, Gray. Wild Strawberry.
Gaylussacia resinosa, Torr. & Gray. Black Huckleberry.
Juglans cinerea, L. Butternut.
" *nigra*, L. Black Walnut.
Morus rubra, L. Red Mulberry.
Podophyllum peltatum, L. May-Apple. Mandrake.
Prunus Americana, Marshall. Wild Red and Yellow Plum.
" *pumila*, L. Sand Cherry.
Pyrus coronaria, L. American Crab-apple.
Ribes Cynosbati, L. Prickly Gooseberry.
" *floridum*, L'Her. Black Currant.
" *oxyacanthoides*, L. Smooth Wild Gooseberry.
" *rubrum*, L., var. *subglandulosum*, Maxim. Red Currant.
Rubus Canadensis, L. Dewberry,
" *occidentalis*, L. Black-cap Raspberry.
" *strigosus*, Michx. Wild Red Raspberry.
" *villosus*, Ait. Blackberry.
Vaccinium Canadense, Kalm. Canada Blueberry.
" *corymbosum*, L. Swamp-Blueberry.
" *macrocarpon*, Ait. American Cranberry.
" *Pennsylvanicum*, Lam. Dwarf Early Blueberry.
" *vacillans*, Solander. Low Blueberry.
Vitis bicolor, LeConte. Summer Grape.
" *riparia*, Michx. Frost Grape.
Zizania aquatica, L. Wild Rice.

NATIVE FORAGE PLANTS.

The native grasses while young, from early spring to winter, without exception, furnish a tender bite which is very acceptable to all sorts of horses, cattle, sheep, and even swine and poultry. Most of the native grasses (about 115 in number) grow in isolated bunches, more or less frequent, and furnish but little food, while a considerable portion soon become unpalatable as the summer approaches. The most important native grasses for pasture or meadow are found in open places and are:

June grass, fowl meadow-grass, and several other species of *Poa* which have no well-known common name; several manna-grasses (*Glyceria*); a few small fescues, two or three Eatonias; blue-joint, two or three small redtops, and several species of Muhlenberg's grass, two or three kinds of mountain rice, reed-grass, two beard-grasses, and several panic-grasses. The following, though quickly and thoroughly disseminated, are not native to our State: Barn-yard grass, crab-grass, foxtail or pigeon-grass, sweet vernal-grass, Timothy, meadow foxtail, the larger redtop so popular for low lands, tall oat-grass, orchard grass, tall fescue, perennial rye-grass, quick-grass.

Besides the true grasses, there are about one hundred and eighty species of grass-like plants mostly found on marshes, which are called *sedges*. They are mostly confounded with the grasses except by the botanist. In addition to these are some twenty-five other narrow-leaved and grass-like plants known as *rushes* which furnish more or less herbage. Many of the sedges and rushes make hay of fair quality when cut early before they become harsh and woody.

On the Jack-pine plains and in many other portions of the sandy stump-lands in the northern counties are two species of sedges found abundantly on dry land. These are *Carex Pennsylvanica*, Lam., and *C. umbellata*, var. *vicina*, Dewey; they are popularly called grasses by the residents of those counties. Inquiries have frequently been made concerning the name, and statements made to the effect that they were very nutritious and that cattle got fat on them early in the spring. So far as we have observed, cattle prefer something else as it starts in spring, thus leaving the sedges untouched to grow all summer and remain green under the snow till the following spring. In spring the cattle eagerly devour the last year's growth of the sedges and thrive on it. This is but another evidence that the quality of the fodder is not of so great importance, provided animals can get enough of it, and can be induced to eat it.

Besides the native grasses, sedges and rushes there are great numbers of other herbaceous plants, usually one here and there which are eaten by hungry stock. Leaves and the tender growth of shrubs and young trees are often eaten in great quantities, and in times of scarcity cattle get astride of young trees bending down the tops so as to reach the leaves and twigs Sheep eat the greatest variety of plants and thus where they feed closely are valuable aids in the clearing of a new country. They eat briars, elders and sprouts of stumps, but will leave some things which they do not like. The weeds that are thus left have an excellent chance to spread and in time occupy much of the ground once covered by the nutritious and edible plants which have been removed. Here we see one of the most excellent reasons for the interference of man in removing the weeds and in encouraging the introduction of the more valuable fodder plants. While these early native pastures and meadows are of incalculable value to the pioneer, without some care they soon deteriorate.

In times of great scarcity of feed in a new country, farmers used to fell trees that cattle might eat the twigs, or "browse," which contain much starch and protoplasm stored away by the trees ready to be used in giving the young growth a start on the approach of warm weather.

Michigan has no native species of clover.

NATIVE BEE PLANTS.

In Michigan there is a very large number of plants which furnish a good quality of honey. If the species is abundant in any region, it usually becomes known to the apiarist as a good bee plant; if not abundant it very likely fails to attract attention. A plant may be rare or important in one region and abundant in another. In autumn, asters and golden rods are known as excellent bee plants, because some few of the many species in the State are plentiful in nearly every neighborhood, but the same sorts of asters or golden rods do not everywhere throughout the State furnish a great amount of the honey. As a rule, those plants which produce odorous or showy flowers afford honey and will be visited by honey bees unless the flower is of a shape which makes it impossible for the bee to reach the food.

Probably in the State there are of native plants, introduced weeds and field crops, a thousand species which furnish excellent food for bees. This is nearly one hundred times as many as the bee keeper has in mind, unless he has given unusual attention to the subject.

Our open low lands furnish a large proportion of the bee pasture; the forests some; the weeds and some of the field, garden and orchard crops a fair amount. Extremely dry or very wet weather are both unfavorable to the yield of honey. Drainage of the swamps and the clearing of waste places are unfavorable to the interests of the bee keeper.

As the botanist now looks at the subject, colors and odors are mere advertisements to call the attention of insects to the rich supplies of food in store for them. It may be said that the honey is there for the bees, but primarily it is there for the good of the plant, secondarily for the good of the insect. Had good old Dr. Watts lived in our day, he would have no doubt written his familiar verse in this way:

How doth the little busy bee
Improve each shining hour?
By carrying pollen day by day
To fertilize each flower.

NATIVE PLANTS FOR THE PROTECTION OF HILLSIDES, EMBANKMENTS AND DRIFTING SANDS.

The following, so far as we know, are the most valuable:

Agropyrum repens, Beauv. Quick- or Quack-Grass. Well naturalized from Europe.
Ammophila arundinacea, Host. Sea Sand-Reed.
Apocynum androsæmifolium, L. Spreading Dogbane.
" *cannabinum*, L. Indian Hemp.
Calamagrostis longifolia, Hook. Dogwood.
Carex siccata, Dewey. Sedge.
Cornus alternifolia, L. Dogwood.
" *Baileyi*, Coult. & Evans. Dogwood.
" *stricta*, Lam.
" *sericea*, L. Silky Cornel.
" *stolonifera*, Michx. Red-osier Dogwood.
Elymus Canadensis, L. Wild Rye.
Poa pratensis, L. June Grass.
Populus balsamifera, L. Balsam Poplar.
" *monilifera*, Ait. Cotton-wood.
" *tremuloides*, Michx. Aspen.
Rubus strigosus, Michx. Red Raspberry.
Salix. Any of our native species growing near by.

Sambucus Canadensis, L. Elder.
" *racemosa*, L. Elder.
Spartina cynosuroides, Willd. Cord-Grass.
Viburnum. Any of our native species near at hand.

PLANTS FOR CARP PONDS.

Elodea Canadensis, Michx. Water-weed.
Glyceria fluitans, R. Br. Manna-Grass.
Lemna minor, L. Duckweed.
" *trisulca*, L. Duckweed.
Potamogeton. Any of our numerous species. Pondweed.
Ranunculus aquatilis, L., and its varieties. Water-Crowfoot.
" *multifidus*, Pursh. Water-Crowfoot.
Sagittaria variabilis, Engelm. Arrow-head.
Spirodela polyrrhiza, Schleid. Duckweed.
Spirogyra. Several species. Pond Scum.
Vallisneria spiralis, L. Eel-grass.
Vaucheria. Several species of green pond weeds.
Wolffia Brasiliensis, Weddell.
" *Columbiana*, Karsten.
Zizania aquatica, L. Wild Rice.

There are several species of low, flowerless plants which would be valuable in this connection.

Utricularia vulgaris, L., Bladderwort, and some other species of this genus have been employed, but within a few years it has been ascertained that the small bladders catch and kill the young fish when very small.

NATIVE TREE-LIKE OR LARGE SHRUBS.

The following list of woody plants includes those about which there may be a difference of opinion as to whether they rank as trees or as shrubs. Several that are mere shrubs in our State certainly rank as trees when well grown on rich land in many of the States south of us. This list numbers thirty species.

Acer spicatum, Lam. Mountain Maple.
Alnus incana, Willd. Speckled Alder. Hoary Alder. Black Alder.
" *serrulata*, Willd. Smooth Alder. Black Alder.
Asimina triloba, Dunal. Papaw. Custard Apple.
Cercis Canadensis, L. Red-bud. Judas-Tree.
Cornus alternifolia, L. f. Dogwood.
" *circinata*, L'Her. Dogwood.
Cratægus coccinea, L. Scarlet Hawthorn. Red Hawthorn. White Thorn.
" *Crus-galli*, L. Cockspur Thorn. Newcastle Thorn.
" *tomentosa*, L. Black Thorn. Pear Haw.
Euonymus atropurpureus, Jacq. Burning-Bush. Waahoo. Spindle-tree. Arrow-wood.
Hamamelis Virginica, L. Witch-hazel.
Prunus Americana, Marshall. Wild Plum. Canada Plum. Horse Plum.
" *Virginiana*, L. Choke-Cherry.
Ptelea trifoliata, L. Hop-tree. Shrubby Trefoil. Wafer Ash.
Quercus prinoides, Willd. Chinquepin Oak.
Rhus copallina, L. Dwarf Sumach.
" *glabra*, L. Smooth Sumach.
" *typhina*, L. Staghorn Sumach.
" *venenata*, DC. Poison Sumach. Poison Dogwood.
Salix discolor, Muhl. Glaucous Willow.
" *longifolia*, Muhl. Sand-bar Willow.
" *lucida*, Muhl. Shining Willow.
Sambucus Canadensis, L. Common Elder.
" *racemosa*, L. Red-berried Elder.

Staphylea trifolia, L. Bladder-nut.
Viburnum Lentago, L. Sheep-berry. Nanny-berry.
" *prunifolium*, L. Black Haw. Stag-bush.
Xanthoxylum Americanum, Mill. Prickly Ash. Toothache-tree.

LIST OF SMALLER SHRUBS.

There are one hundred and eight species and varieties.

Amelanchier alnifolia, Nutt. June- or Service-berry.
" *Canadensis*, Torr. & Gray, var. *oblongifolia*, T. & G. June Berry.
" *oligocarpa*, Roem. June-berry.
Ampelopsis quinquefolia, Michx. Five-leaf Ivy. Virginian Creeper.
Andromeda polifolia, L. Wild Rosemary.
Arctostaphylos Uva-ursi, Spreng. Bearberry.
Betula glandulosa, Michx. Dwarf Birch.
" *pumila*, L. Low Birch.
Cassandra calyculata, Don. Leather-Leaf.
Ceanothus Americanus, L. New Jersey Tea. Red-root.
" *ovatus*, Desf.
Celastrus scandens, L. Climbing Bitter-sweet. Wax-work.
Cephalanthus occidentalis, L. Button-bush.
Cornus Baileyi, C. & E. Bailey's Cornel.
" *stricta*, Lam.
" *sericea*, L. Silky Cornel. Kinnikinnik.
" *stolonifera*, Michx. Red-osier Dogwood.
Corylus Americana, Walt. Hazel-nut.
" *rostrata*, Ait. Beaked Hazel-nut.
Diervilla trifida, Mœnch. Bush-Honeysuckle.
Dirca palustris, L. Leatherwood. Moosewood.
Empetrum nigrum, L. Black Crowberry.
Euonymus Americanus, L., var. *obovatus*, Torr. & Gray. Strawberry Bush.
Gaylussacia resinosa, Torr. and Gray. Black Huckleberry.
Hypericum Kalmianum, L. Kalm's St. John's-wort.
" *prolificum*, L. Shrubby St. John's-wort.
Ilex verticillata, Gray. Winterberry. Black Alder.
Juniperus comunis, L. Common Juniper.
" " L., var. *procumbens*, Pursh.
Kalmia augustifolia, L. Sheep Laurel. Lambkill.
" *glauca*, Ait. Pale Laurel.
Ledum latifolium, Ait. Labrador Tea.
Lindera Benzoin, Blume. Spice-bush. Benjamin-bush.
Lonicera cœrulea, L. Mountain Fly-Honeysuckle.
" *ciliata*, Muhl. Fly-Honeysuckle.
" *glauca*, Hill.
" *grata*, Ait. Am. Woodbine.
" *hirsuta*, Eaton. Hairy Honeysuckle.
" *involucrata*, Banks.
" *oblongifolia*, Muhl. Swamp Fly-Honeysuckle.
Menispermum Canadense, L. Moonseed.
Myrica asplenifolia, Endl. Sweet-Fern.
" *cerifera*, L. Bayberry. Wax-Myrtle.
" *Gale*, L. Sweet Gale.
Nemopanthes fascicularis, Raf. Mountain Holly.
Physocarpus opulifolius, Maxim. Nine-bark.
Potentilla fruticosa, L. Shrubby Cinque-foil.
Prunus pumila, L. Sand Cherry. Dwarf Cherry.
Pyrus arbutifolia, L. f. Choke-berry.
" " var. *melanocarpa*, Hook.
Rhamnus alnifolia, L'Her. Buckthorn.
Rhus Canadensis, Marsh. Fragrant Sumach.
" *Toxicodendron*, L. Poison Ivy. Poison Oak.
Ribes Cynosbati, L. Prickly Gooseberry.
" *gracile*, Michx.
" *lacustre*, Poir.
" *oxyacanthoides*, L.

Ribes prostratum, L'Her. Fetid Currant.
" *rubrum*, L., var. *subglandulosum*, Maxim. Red Currant.
Rosa acicularis, Lindl. Rose.
" *Arkansana*, Porter.
" *blanda*, Ait.
" *Carolina*, L. Swamp Rose.
" *Engelmanni*, Wats.
" *humilis*, Marsh. Dwarf Wild Rose.
" *Sayi*, Schwein.
" *setigera*, Michx. Climbing or Prairie Rose.
Rubus Canadensis, L. Dewberry.
" *hispidus*, L. Running Swamp-Blackberry.
" *Nutkanus*, Moçino. Salmon-berry.
" *occidentalis*, L. Black Raspberry. Thimbleberry.
" *odoratus*, L. Purple Flowering-Raspberry.
" *strigosus*, Michx. Wild Red Raspberry.
" *villosus*, Ait. Common or High Blackberry.
Salix adenophylla, Hook.
" *candida*, Willd. Sage Willow. Hoary Willow.
" *cordata*, Muhl, and varieties. Heart-leaved Willow.
" *humilis*, Marsh. Prairie Willow.
" *glaucophylla*, Bebb, and varieties.
" *myrtilloides*, L.
" *petiolaris*, Smith.
" *rostrata*, Richard.
" *sericea*, Marsh. Silky Willow.
" *tristis*, Ait. Dwarf Gray Willow.
Shepherdia Canadensis, Nutt.
Spiræa salicifolia, L. Common Meadow-Sweet.
" *tomentosa*, L. Hardhack. Steeple-Bush.
Symphoricarpos occidentalis, Hook. Wolfberry.
" *racemosus*, Michx. Snowberry.
" " " var. *pauciflorus*, Robbins.
Taxus Canadensis, Willd. Yew.
Vaccinium cæspitosum, Michx., var. *cuneifolium*, Nutt.
" *Canadense*, Kalm. Canada Blueberry.
" *corymbosum*, L. Blueberry.
" *myrtilloides*, Hook.
" *ovalifolium*, Smith.
" *Pennsylvanicum*. Lam. Dwarf Bluberry.
" *uliginosum*, L. Bog Bilberry.
" *vacillans*, Solander.
" *Vitis-Idæa*, L. Cowberry. Mountain Cranberry.
Viburnum acerifolium, L. Dockmackie. Arrow-wood.
" *cassinoides*, L. Withe-rod.
" *lantanoides*, Michx. Hobble-bush. American Wayfaring-tree.
" *Opulus*, L. Cranberry-tree.
" *pauciflorum*, Pylaie.
" *pubescens*, Pursh.
Vitis bicolor, LeConte. Summer Grape.
" *riparia*, Michx. Frost Grape.

WEEDS NATIVE AND INTRODUCED.

A new country is comparatively free from weeds, but as the years pass by, one after another, weeds are introduced. Some of them are natives of the neighborhoods in which they are found, but most of them have been introduced from other portions of our own country or from foreign countries. The farmer is not inclined to adopt Emerson's notion of a weed as "a plant whose virtues have not yet been discovered," at least he doesn't purpose trying to find a use for them. The seeds of most weeds find their way on to a farm nicely mixed with seeds of grasses, grains and clovers, which are drilled in or sowed broadcast on fertile soil, where they are afforded an excellent opportunity to grow and multiply. In some instances

weeds are introduced as a part of the packing or straw employed to protect castings, marble, crockery or fruit trees. Such foreign packing should always be burned at once.

By these processes the older the country the more troublesome weeds it will have, as every new intruder usually comes to stay. In most cases a weed becomes well established before it is discovered and the inquiry comes: "What is it, and how can I get rid of it?"

Weeds are likely to become most troublesome, where farmers are slovenly and where they are not thorough in cultivating throughout the season the so-called "hoed crops." In regions where "hoed crops" are seldom raised or only raised in small quantity, certain weeds are likely to prove very annoying. The majority of our weeds have been introduced from Europe, as will be seen by a comparison of the two lists which follow:

LIST OF WEEDS INTRODUCED FROM EUROPE.

The list includes fifty-seven species.

Alyssum calycinum, L. Alyssum.
Amaranthus chlorostachys, Willd. Pigweed.
" *retroflexus*, L. Pigweed.
Anthemis Cotula, DC. May-weed.
Arctium Lappa, L. Burdock.
Brassica nigra, Koch. Black Mustard.
" *Sinapistrum*, Boiss. Charlock.
Bromus secalinus, L. Cheat. Chess.
Capsella Bursa-pastoris, Moench. Shepherd's Purse.
Chenopodium album, L. Lamb's Quarters. Pigweed.
Chrysanthemum Leucanthemum, L. White Daisy. Ox-Eye Daisy.
Cichorium Intybus, L. Chicory.
Cnicus arvensis, Hoffm. Canada Thistle.
" *lanceolatus*, Hoffm. Common Thistle. Bull Thistle.
Conium maculatum, L. Poison Hemlock.
Convolvulus arvensis, L. Bindweed.
Cynoglossum officinale, L. Hound's-Tongue.
Datura Stramonium, L. Stramonium. Thorn Apple.
Daucus Carota, L. Carrot.
Dipsacus sylvestris, Mill. Wild Teasel.
Echinospermum Lappula, Lehm. Stickseed.
Eragrostis major, Host.
Hypericum perforatum, L. St. John's-wort.
Inula Helenium, L. Elecampane.
Lactuca Scariola, L. Prickly Lettuce.
Leonurus Cardiaca, L. Motherwort.
Linaria vulgaris, Mill. Ramsted. Butter and Eggs.
Lithospermum arvense, L. Red-root. Corn Gromwell. Wheat Thief.
Lychnis Githago, Lam. Corn Cockle.
Malva rotundifolia, L. Common Mallow.
Medicago lupulina, L. Black Medick.
Melilotus alba, Lam. White Melilot. Sweet Clover.
Nepeta Cataria, L. Catnip.
Panicum Crus-galli, L. Barnyard-Grass.
" *glabrum*, Gaudin. Panic-Grass.
" *sanguinale*, L. Crab- or Finger-Grass.
Plantago lanceolata, L. Ribgrass. English Plantain.
Polygonum Convolvulus, L. Black Bindweed.
Portulaca oleracea, L. Purslane.
Ranunculus acris, L. Buttercups.
" *bulbosus*, L. Buttercups.
Rumex Acetosella, L. Field or Sheep Sorrel.
" *crispus*, L. Curled Dock.
" *obtusifolius*, L. Bitter Dock.

Saponaria officinalis, L. Soapwort. Bouncing Bet.
Setaria glauca, Beauv. Foxtail. Pigeon-Grass.
" *viridis*, Beauv. Green Foxtail. Bottle-Grass.
Silene noctiflora, L. Night flowering Catchfly.
Sisymbrium officinale, Scop. Hedge Mustard.
Sonchus asper, Vill. Spiny-leaved Sow Thistle.
" *oleraceus*, L. Sow Thistle.
Stellaria media, Smith. Chickweed.
Tanacetum vulgare, L. Common Tansy.
Taraxacum officinale, Weber. Dandelion.
Tragopogon pratensis, L. Goat's-beard.
Verbascum Blattaria, L. Moth Mullein.
" *Thapsus*, L. Mullein.

LIST OF INDIGENOUS WEEDS.

This includes twenty-two species.

Amarantus albus, L. Tumble Weed.
" *blitoides*, Watson.
Ambrosia artemisiæfolia, L. Roman Wormwood. Hog-weed.
Artemisia biennis, Willd. Biennial Wormwood.
Bidens frondosa, L. Beggar-ticks. Stick-tight.
Brunella vulgaris, L. Heal-all.
Cenchrus tribuloides, L. Hedge-hog- or Bur-Grass.
Chenopodium hybridum, L. Maple-leaved Goosefoot.
Cyperus esculentus, L. Nut-grass.
Erigeron Canadensis, L. Horse-weed. Butter-weed.
Hedeoma pulegioides, Pers. Pennyroyal.
Helianthus tuberosus, L. Jerusalem Artichoke.
Lepidium Virginicum, L. Peppergrass.
Œnothera biennis, L. Evening Primrose.
Panicum capillare, L. Old-witch Grass.
Plantago major, L. Plantain.
" *Rugelii*, Decaisne. Plantain.
Polygonum aviculare, L. Knotgrass.
" *erectum*, L. Erect Knotgrass.
Rudbeckia hirta, L. Cone-flower.
Urtica gracilis, Ait. Tall Wild Nettle.
Xanthium Canadense, Mill. Cocklebur. Clotbur.

LIST OF RARE OR LOCAL PLANTS.

Most of our rare or local plants are included in the following list:

Acerates viridiflora, Ell. Green Milkweed.
Adlumia cirrhosa, Raf. Climbing Fumitory.
Æsculus glabra, Willd. Fetid or Ohio Buckeye.
Agrimonia parviflora, Ait. Small-flowered Agrimony.
Aletris farinosa, L. Colic-root. Star-grass.
Amorpha canescens, Nutt. Lead-Plant.
Anemonella thalictroides, Spach. Rue-Anemone.
Aristida purpurascens, L. Triple-awned Grass.
Asclepias obtusifolia, Michx. Obtuse-leaved Milkweed.
" *verticillata*, L. Whorled Milkweed.
Asplenium viride, Hudson. Spleenwort.
Astragalus Canadensis, L. Milk Vetch.
" *Cooperi*, Gray. Cooper's Vetch.
Baptisia leucantha, T. and G. Wild Indigo.
Bartonia tenella, Muhl. Bartonia. Screw-stem.
Botrychium Lunaria, Swz. Moonwort.
" *simplex*, Hitchcock. Moonwort.
Bromus breviaristatus, Thurber. Brome-Grass.
" *Kalmii*, Gray. Wild Chess.
Bouteloua racemosa, Lag. Muskit-Grass.

Buchnera Americana, L. Blue-Hearts.
Cacalia suaveolens, L. Indian Plantain.
" *tuberosa*, Nutt. Tuberous Indian Plantain.
Calamagrostis stricta, Trin. Reed Bent-Grass.
Calypso borealis, Salisb.
Camassia Fraseri, Torr. Eastern Camass. Wild Hyacinth.
Cardamine pratensis, L. Cuckoo Flower.
Carex adusta, Boott. Sedge.
" *alopecoidea*, Tuck., var. *sparsispicata*, Dewey. Sedge.
" *aquatilis*, Wahl. Sedge.
" *castanea*, Wahl. Sedge.
" *Crus-corvi*, Shuttlew. Sedge.
" *Davisii*, Schwein. and Torr. Sedge.
" *decomposita*, Muhl. Sedge.
" *exilis*, Dewey.
" *formosa*, Dewey. Sedge.
" *hystricina*, Muhl., var. *Dudleyi*, Bailey. Sedge.
" *laxiculmis*, Schwein. Sedge.
" *pallescens*, L. Sedge.
" *Richardsoni*, R. Br. Sedge.
" *Sartwellii*, Dewey. Sedge.
" *scabrata*, Schwein. Sedge.
" *Schweinitzii*, Dewey. Sedge.
" *scirpoidea*, Michx. Sedge.
" *squarrosa*, L. Sedge.
" *sychnocephala*, Carey. Sedge.
" *triceps*, Michx., var *hirsuta*, Bailey. Sedge.
" *umbellata*, Schkuhr. Sedge.
" *Willdenovii*, Schkuhr. Sedge.
Castanea sativa, Mill., var. *Americana*, Gray. Chestnut.
Cerastium arvense, L. Field Chickweed.
Cercis Canadensis, L. Red-bud. Judas-tree.
Chimaphila maculata, Pursh. Spotted Wintergreen.
Cimicifuga racemosa, Nutt. Black Cohosh.
Claytonia Caroliniana, Michx. Spring Beauty.
Commelina Virginica, L. Day-Flower.
Coreopsis palmata, Nutt. Tickseed.
" *verticillata*, L.
Cyperus aristatus, Rottb. Galingale.
" *Engelmanni*, Steud. Galingale.
Cypripedium arietinum, R. Br. Ram's-Head Lady's Slipper.
" *candidum*, Muhl. White Lady's Slipper.
Dalibarda repens, L. Barren Strawberry.
Desmodium ciliare, DC. Tick-Trefoil.
" *Illinoense*, Gray. Tick-Trefoil.
" *Marilandicum*, F. Boott. Tick-Trefoil.
" *rigidum*, DC. Tick-Trefoil.
" *sessilifolium*, T. and G. Tick-Trefoil.
Diarrhena Americana, Beauv. Grass.
Dicksonia pilosiuscula, Willd. Fern.
Dodecatheon Meadia, L. Shooting-Star.
Draba Caroliniana, Walt. Whitlow-Grass.
Dracocephalum parviflorum, Nutt. Dragon-Head.
Eatonia Dudleyi, Vasey.
Eleocharis equisetoides, Torr. Spike-Rush.
" *olivacea*, Torr. Spike-Rush.
" *pygmæa*, Torr. Spike-Rush.
" *quadrangulata*, R. Br. Spike-Rush.
" *Robbinsii*, Oakes. Spike-Rush.
" *rostellata*, Torr. Spike-Rush.
Equisetum variegatum, Schleicher. Horsetail.
Eragrostis pectinacea, Gray, var. *spectabilis*, Gray.
Eriophorum vaginatum, L. Cotton-Grass.
Eryngium yuccæfolium, Michx. Rattlesnake-Master. Button Snakeroot.
Frasera Carolinensis, Walt. American Columbo.

Fraxinus pubescens, Lam. Red Ash.
" *viridis*, Michx. Green Ash.
Galium concinnum, T. and G. Bedstraw.
Gaura biennis, L.
Gentiana alba, Muhl. Whitish Gentian.
" *puberula*, Michx. Blue Gentian.
" *Saponaria*, L. Soapwort Gentian.
" *serrata*, Gunner. Smaller Fringed Gentian.
Gerardia auriculata, Michx. Wild Foxglove.
Geum triflorum, Pursh. Three-flowered Avens.
Gillenia trifoliata, Moench. Bowman's Root.
Gleditschia triacanthos, L. Honey-Locust. Three-thorned Acacia.
Glyceria pallida, Trin. Manna-Grass.
Graphephorum melicoideum, Desv.
Habenaria ciliaris, R. Br. Yellow Fringed-Orchis.
" *leucophœa*, Gray. Western Orchis.
Helianthus rigidus, Desf. Wild Sunflower.
Hemicarpha subsquarrosa, Nees.
Heuchera Americana, L. Common Alum-root.
Hierochloe borealis, Roem. & Schultes. Vanilla Grass.
Hydrastis Canadensis, L. Golden Seal. Yellow Puccoon.
Hydrocotyle umbellata, L. Water Pennywort.
Hypericum ellipticum, Hook St. Johns-wort.
Ipomœa pandurata, Meyer. Wild Potato-vine.
Iris lacustris, Nutt. Dwarf Lake Iris.
Lactuca hirsuta. Muhl. Wild Lettuce.
Liatris cylindracea, Michx. Button Snakeroot. Blazing-Star.
Liparis liliifolia, Rich. Twayblade.
Melica Smithii, Vasey.
Mertensia Virginica, DC. Virginian Cowslip. Lungwort. Blue Bells.
Mimulus Jamesii, Torr. Monkey-flower.
" *moschatus*, Dougl. Monkey-flower.
Monarda didyma, L. Oswego Tea. Bee-Balm.
Moneses grandiflora, Salisb. One-flowered Pyrola.
Muhlenbergia Wildenovii, Trin. Grass.
Myosotis verna, Nutt. Scorpion-grass. Forget-me-not.
Nasturtium lacustre, Gray. Lake Cress.
Opuntia Rafinesquii, Engelm. Prickly Pear.
Oryzopsis Canadensis, Torr. Mountain Rice.
Panicum clandestinum, L. Panic-Grass.
" *xanthophysum*, Gray. Panic-Grass.
Pellæa gracilis, Hook. Cliff-brake.
Pentstemon lævigatus, Solander. Beard-tongue.
Phlox bifida, Beck. Phlox.
Poa nemoralis, L. Meadow-Grass.
Pogonia pendula, Lind.
" *verticillata*, Nutt.
Polytænia Nuttallii, DC.
Potamogeton hybridus, Michx. Pondweed.
" *marinus*, L. Pondweed.
" *Robbinsii*, Oakes.
Poterium Canadense, B. and H. Burnet.
Prenanthes racemosa, Michx.
Primula Mistassinica, Michx. Primrose. Cowslip.
Quercus prinoides, Willd. Dwarf Chestnut Oak.
" *imbricaria*, Michx. Laurel or Shingle Oak.
Ranunculus ambigens, Watson. Water Plantain. Spearwort.
" *rhomboideus*, Goldie. Early Crowfoot.
Rhus Canadensis, Marsh. Fragrant Sumach.
Rosa setigera, Michx. Climbing or Prairie Rose.
Ruellia ciliosa, Pursh.
Sabbatia angularis, Pursh. American Centaury.
Sagittaria graminea, Michx. Grass-leaved Arrow-head.
Salix balsamifera, Barratt.
" *tristis*, Ait. Dwarf Gray Willow.

Scheuchzeria palustris, L.
Scirpus Clintonii, Gray. Bulrush. Club-Rush.
" *cæspitosus*, L. Bulrush.
" *Olneyi*, Gray. Bulrush.
" *polyphyllus*, Vahl. Bulrush.
" *Smithii*, Gray. Bulrush.
" *Torreyi*, Olney. Bulrush.
Scleria triglomerata, Michx. Nut-Rush.
" *verticillata*, Muhl. Nut-Rush.
Scutellaria parvula, Michx. Skullcap.
" *pilosa*, Michx. Skullcap.
Selaginella spinosa, Beauv.
Silphium integrifolium, Michx.
" *laciniatum*, L. Rosin-weed. Compass-Plant.
" *perfoliatum*, L. Cup-Plant.
Solea concolor, Ging. Green Violet.
Spiræa lobata, Jacq. Queen of the Prairie.
" *tomentosa*, L. Hardhack. Steeple-Bush.
Spiranthes latifolia, Torr. Ladies' Tresses.
Stachys hyssopifolia, Michx. Hedge-Nettle.
Stellaria crassifolia, Ehrh. Starwort. Chickweed.
Stylophorum diphyllum, Nutt. Celandine Poppy.
Synthyris Houghtoniana, Benth.
Tiedemannia rigida, C. & R. Cowbane.
Tipularia discolor, Nutt. Crane-fly Orchis.
Trillium nivale, Riddell. Dwarf White Trillium.
" *sessile*, L. Sessile Wake Robin.
Typha angustifolia, L. Narrow-leaved Cat-tail Flag.
Utricularia gibba, L. Bladderwort.
" *minor*, L. Smaller Bladderwort.
" *resupinata*, B. D. Greene.
Valeriana edulis, Nutt. Valerian.
Viburnum prunifolium, L. Black Haw.
Viola lanceolata, L. Lance-leaved Violet.
Waldsteinia fragarioides, Tratt. Barren Strawberry.
Woodwardia angustifolia, Smith. Chain-Fern.

NATIVE PLANTS FAST DISAPPEARING.

Many of our fathers and grandfathers spent a considerable portion of their energies in clearing away trees, shrubs, and breaking up the land that they might have fertile fields. The newer portions of our State are still rapidly undergoing this same transition.

As the country becomes older and more thickly settled almost everything seems to conspire against the trees and smaller plants. Proprietors are still making extensions to their clearings. The "tidy" farmer ditches the cat-holes and marshes, clears out the elders and viburnums to make more room for turnips and better grasses. He turns stock into the wood lot and the flowers of spring and summer retreat to the brush-heaps and a few places inaccessible to the cattle. Fire burns out the dried-up swamps. The officers of the railroad see that the strips alongside the track are often mowed. The highways are attacked and the larger vegetation removed. In places, nurserymen or their agents collect large numbers of the choicer wild plants, as prairie roses and lady's slippers. Near high schools and colleges, the student collectors exterminate many choice plants, root and branch.

Many wild plants vigorously protest against these attempts toward their extermination, and start again and again to recover the lost ground, but with the hand of a thorough farmer against them, sooner or later they succumb, the scattered remnants only surviving in the few remaining swamps, along railroads, on a few ragged hills and out of the way places.

The small prairies in the two tiers of southern counties were formerly the home of quite a number of southern and western plants which are seldom found today. Among these may be mentioned:

Amorpha canescens, Nutt. Lead-Plant.
Baptisia leucantha, T. & G. Wild Indigo.
Bouteloua racemosa, Lag. Muskit-Grass.
Buchnera Americana, L. Blue-Hearts.
Cacalia suaveolens, L. Indian Plantain.
" *tuberosa*, Nutt. Tuberous Indian Plantain.
Camassia Fraseri, Torr. Eastern Camass. Wild Hyacinth.
Commelina Virginica, L. Day-Flower.
Coreopsis palmata, Nutt.
Dalibarda repens, L. Barren Strawberry.
Desmodium ciliare, DC. Tick-Trefoil.
" *Illinoense*, Gray. Tick-Trefoil.
" *sessilifolium*, T. & G. Tick-Trefoil.
Diarrhena Americana, Beauv.
Dodecatheon Meadia, L. Shooting-Star.
Eryngium yuccæfolium, Michx. Rattlesnake-Master. Button Snake-Root.
Gaura biennis, L.
Gentiana puberula, Michx. Blue Gentian.
" *Saponaria*, L. Soapwort Gentian.
Gerardia auriculata, Michx. Wild Foxglove.
Gillenia trifoliata, Moench. Bowman's Root.
Helianthus rigidus, Desf. Wild Sunflower.
Pentstemon lævigatus, Solander. Beard-tongue.
Phlox bifida, Beck.
Pogonia pendula, Lindl.
" *verticillata*, Nutt.
Polytænia Nuttallii, DC.
Poterium Canadense, B. & H. Burnet.
Rosa setigera, Michx. Climbing or Prairie Rose.
Ruellia ciliosa, Pursh.
Scutellaria pilosa, Michx. Skullcap.
Silphium integrifolium, Michx.
" *laciniatum*, L. Rosin-weed. Compass-Plant.
" *perfoliatum*, L. Cup-Plant.
Spiræa lobata, Jacq. Queen of the Prairie.
Synthyris Houghtoniana, Benth.
Viburnum prunifolium, L. Black Haw.

LIST OF PLANTS INTRODUCED FROM EUROPE AND BECOMING NATURALIZED.

One hundred and forty-two species of plants have been introduced from Europe into Michigan.

Abutilon Avicennæ, Gaertn. Velvet-Leaf.
Agrostis alba, L. White Bent-Grass. Red Top.
" " var. *vulgaris*, Thurb. Red Top.
Alopecurus geniculatus, L. Floating Foxtail.
" *pratensis*, L. Meadow Foxtail.
Alyssum calycinum, L.
Amarantus chlorostachys, Willd. Pigweed.
" *retroflexus*, L. Pigweed.
Anthemis arvensis, L. Corn Camomile.
" *Cotula*, DC. May-weed.
Anthoxanthum odoratum, L. Sweet Vernal-Grass.
Arenaria serpyllifolia, L. Thyme-leaved Sandwort.
Arctium Lappa, L. Burdock.
Asparagus officinale, L. Asparagus.
Brassica alba, Boiss. White Mustard.
" *nigra*, Koch. Black Mustard.
" *Sinapistrum*, Boiss. Charlock.
Bromus secalinus, L. Cheat or Chess.

Camelina sativa, Crantz. False Flax.
Cannabis sativa, L. Hemp.
Capsella Bursa-pastoris, Moench. Shepherd's Purse.
Carum Carui, L. Caraway.
Cerastium vulgatum, L. Larger Mouse-ear Chickweed.
Chelidonium majus, L. Celandine.
Chenopodium album, L. Lamb's Quarters. Pigweed.
" *ambrosioides*, L. var. *anthelminticum*, Gray. Wormseed.
" *Botrys*, L. Jerusalem Oak. Feather Geranium.
" *glaucum*, L. Oak-leaved Goosefoot.
" *murale*, L.
" *urbicum*, L. Pigweed.
Chrysanthemum Leucanthemum, L. Ox-Eye or White Daisy. White-weed.
Cichorium Intybus, L. Chicory.
Cnicus arvensis, Hoffm. Canada Thistle.
" *lanceolatus*, Hoffm. Common Thistle.
Conium maculatum, L. Poison Hemlock.
Convolvulus arvensis, L. Bindweed.
Cynoglossum officinale, L. Hound's-Tongue.
Dactylis glomerata, L. Orchard Grass.
Datura Stramonium, L. Jamestown-Weed. Thorn-Apple.
Daucus Carota, L. Carrot.
Delphinium Consolida, L. Field Larkspur.
Dianthus deltoides, L. Maiden Pink.
Dipsacus sylvestris, Mill. Wild Teasel.
Draba verna, L. Whitlow-Grass.
Echinospermum Lappula, Lehm. Stickseed.
Eleusine Indica, Gærtn. Crab-Grass.
Eragrostis major, Host.
Erodium cicutarium, L'Her. Storksbill.
Euphorbia Cyparissias, L. Spurge.
" *Helioscopia*, L. "
" *platyphylla*, L. "
Fagopyrum esculentum, Moench. Buckwheat.
Festuca elatior, L. Taller or Meadow Fescue.
" " var. *pratensis*, Gray.
Galeopsis Tetrahit, L. Hemp-Nettle.
Geranium pusillum, L.
Hemerocallis fulva, L. Day-Lily.
Hesperis matronalis, L. Rocket. Dame's Violet.
Hibiscus Trionum, L. Bladder Ketmia.
Hyoscyamus niger, L. Black Henbane.
Hypericum perforatum, L. St. John's-wort.
Inula Helenium, L. Elecampane.
Lactuca Scariola, L Prickly Lettuce.
Lamium amplexicaule, L. Dead-Nettle.
Leontodon autumnalis, L. Fall Dandelion.
Leonurus Cardiaca, L. Motherwort.
Linaria vulgaris, Mill. Ramsted. Butter and Eggs.
Lithospermum arvense, L. Red-root. Wheat-thief.
" *officinale*, L. Gromwell.
Lychnis Coronaria, DC. Cockle.
" *Githago*, Lam. Corn Cockle.
Lycium vulgare, Dunal. Matrimony-Vine.
Lysimachia nummularia, L. Moneywort.
Malva Alcea, L. Mallow.
" *crispa*, L. Curled Mallow.
" *moschata*, L. Musk Mallow.
" *rotundifolia*, L. Common Mallow.
Marrubium vulgare, L. Horehound.
" *Medicago lupulina*, L. Black Medick.
Melilotus alba, Lam. White Melilot.
" *officinalis*, Willd. Yellow Melilot.
Mentha piperita, L. Peppermint.
" *viridis*, L. Spearmint.
Nasturtium Armoracia, Fries. Horseradish.
" *officinale*, R. Br. Water-Cress.

Nepeta Cataria, L. Catnip.
" *Glechoma*, Benth. Ground Ivy. Gill-over-the-Ground.
Nicandra physaloides, Gaertn. Apple of Peru.
Nicotiana rustica, L. Wild Tobacco.
Panicum Crus-galli, L. Barnyard-Grass.
" *glabrum*, Gaudin.
" *sanguinale*, L. Crab- or Finger-Grass.
Pastinaca sativa, L. Parsnip.
Phalaris Canariensis, L. Canary-Grass.
Phleum pratense, L. Timothy. Herd's-Grass.
Plantago lanceolata, L. Ribgrass. English Plantain.
Poa annua, L. Low Spear-Grass.
" *compressa*, L. Wire-Grass. English Blue-Grass.
Polygonum Convolvulus, L. Black Bindweed.
" *Persicaria*, L. Lady's Thumb.
Populus alba, L. White Poplar. Abele.
Portulaca oleracea, L. Purslane.
Ranunculus acris, L. Tall Buttercups.
" *bulbosus*, L. Bulbous Buttercups.
Rumex Acetosella, L. Field or Sheep Sorrel.
" *crispus*, L. Curled Dock. Narrow-leaved D.
" *obtusifolius*, L. Bitter Dock.
Salix alba, L. White Willow.
" *Babylonica*, Tourn. Weeping Willow.
" *fragilis*, L. Crack Willow.
Saponaria officinalis, L. Bouncing Bet.
" *Vaccaria*, L.
Scleranthus annuus, L. Knawel.
Sedum acre, L. Mossy Stone-crop.
" *Telephium*, L. Live-for-ever.
Setaria glauca, Beauv. Foxtail. Pigeon-Grass.
" *viridis*, Beauv. Green Foxtail. Bottle-Grass.
Silene Armeria, L. Sweet-William Catchfly.
" *Cucubalus*, Wibel. Bladder Campion.
" *noctiflora*, L. Night-flowering Catchfly.
Sisymbrium officinale, Scop. Hedge Mustard.
Solanum Dulcamara, L. Bittersweet.
Sonchus asper, Vill. Spiny-leaved Sow-Thistle.
" *oleraceus*, L. Common Sow-Thistle.
Stellaria media, Smith. Chickweed.
Symphytum officinale, L. Comfrey.
Tanacetum vulgare, L. Tansy.
Taraxacum officinale, Weber. Common Dandelion.
Thlaspi arvense, L. Field Pennycress.
Tragopogon pratensis, L. Goat's-beard.
Trifolium agrarium, L. Yellow or Hop-Clover.
" *arvense*, L. Rabbit-foot Clover.
" *hybridum*, L. Alsike Clover.
" *medium*, L. Zigzag Clover. Mammoth Clover.
" *pratense*, L. Red Clover.
" *procumbens*, L. Low Hop-Clover.
Tussilago Farfara, L. Coltsfoot.
Urtica dioica, L. Great Stinging Nettle.
Verbascum Blattaria, L. Moth Mullein.
Verbascum Thapsus, L. Mullein.
Veronica arvensis, L. Corn Speedwell.
Viola tricolor, L., var. *arvensis*, DC. Pansy. Heart's-Ease.

PARASITIC FUNGI.

When a large area is cleared of vegetation of a miscellaneous character, and the ground is then covered with plants of one kind, this large area, after a time is much more liable to be damaged by injurious insects than it was before the change was made. The increased supply of suitable food encourages certain one or more kinds of insect enemies. A similar state

of things seems to prevail in reference to parasitic fungi. For example, fungi infesting cultivated grapes sometimes sweep down with great severity in many sections where vineyards are large or numerous, while a few vines in isolated neighborhoods may often escape uninjured. So it is with rust, smut and bunt on wheat, smut on corn, lettuce mold, rust on onions, and black knot on cherries and plums.

Recently the life history of many fungi injurious to cultivated plants, including some experiments with materials to check their progress, has received considerable attention in this country.

As we have insects which by preying on other injurious insects are beneficial to the progress of agriculture and horticulture, so we have a goodly number of fungi which prey on our weeds and tend more or less to keep them in check. Recently there have been a few successful efforts made in introducing the proper insects to prey on injurious insects. In time very likely there may be introduced certain parasitic fungi which shall aid in the extermination of weeds.

At the Agricultural College, Shepherd's Purse in many places has been nearly all destroyed by a parasitic fungus, *Cystopus candidus*, Lev. Common purslane has been much checked by *Cystopus Portulacæ*, DeBy, and in a few places the common elder by *Æcidium sambuci*, Sch. For some years past, large patches of the common milkweed have disappeared gradually, one after another, through the agency of some disease—possibly a microbe. Three species of milkweed are similarly affected. One attempt, as yet unsuccessful, has been made to disseminate this milkweed disease to neighborhoods where the plants are abundant and thrifty.

In these parasitic fungi we see an important factor which helps control the geographical distribution of plants, and may there not be something here to help explain why certain foreign species for a time are often so vigorous in a new country? Isolation is favorable to thrift, while large masses are opposed to long continued escape from the ravages of insects or parasitic fungi.

It was a part of our plan to prepare a list of parasitic fungi, especially so far as seen at the Agricultural College, but we have not yet been able to make it complete enough to satisfy us.

FLOWERING PARASITES AND SAPROPHYTES DESTITUTE OF GREEN LEAVES.

There are a few native flowering plants which are destitute of green throughout their growth and development. They subsist entirely on decaying animal or vegetable matter, or to some extent on matter as it is assimilated by growing plants, or they may live entirely on what they can take from such plants.

The list is a short one and includes:

Aphyllon fasiculatum, Gray. Cancer-root.
" *uniflorum*, Gray. Cancer-root.
Conopholis Americana, Wallroth. Squaw-root.
Cuscuta chlorocarpa, Engelm. Dodder.
" *Gronovii*, Willd. Dodder.
" *tenuiflora*, Engelm. Dodder.
Epiphegus Virginiana, Bart. Beech-drops.
Monotropa Hypopitys, L. Pine-sap. False Beech-drops.
" *uniflora*, L. Indian Pipe. Corpse-Plant.
Pterospora Andromedea, Nutt. Pine-drops.

GREEN LEAVED PARASITES.

There are a few attractive native plants which have usually baffled all attempts to introduce them into cultivation. The reason for this lack of success is probably owing to the fact that the plants under consideration are partially parasitic. They will not thrive except when some of their roots are attached to their host plants. This list is a short one, and includes:

Castilleia coccinea, Spreng. Scarlet Painted-Cup.
" *pallida*, Kunth, var. *septentrionalis*, Gray. Pale Painted-Cup.
Comandra livida, Richardson. Bastard Toad-flax.
" *umbellata*, Nutt. Bastard Toad-flax.
Gerardia aspera, Dougl. Gerardia.
" *auriculata*, Michx. Gerardia.
" *flava*, L. Downy Foxglove.
" *lævigata*, Raf. Gerardia.
" *pedicularia*, L. Lousewort Foxglove.
" *purpurea*, L. Purple Gerardia.
" " var *paupercula*, Gray. Purple Gerardia.
" *quercifolia*, Pursh. Smooth Foxglove.
" *tenuifolia*, Vahl. Slender Gerardia.
" " var. *asperula*, Gray. Slender Gerardia.

NATIVE POISONOUS PLANTS.

Besides two species of nettles (*Urtica gracilis*, Ait., and *Laportea Canadensis*, Gaud.) there are only two species of native plants which are of any prominence as poisonous to the touch, and even these two are not poisonous to all persons. The latter plants or shrubs are known as poison sumach or poison dogwood (*Rhus venenata*, DC.), and poison ivy, or poison oak (*Rhus Toxicodendron*, L.). The last named plant is the most troublesome, as it is often common on dry land, while the one previously noticed is confined to swamps which are not so often frequented. Poison ivy has three leaflets to each leaf, while the handsome Virginian Creeper often confounded with it usually has five leaflets to the leaf, and is harmless. The roots, leaves or flowers of many of the medicinal plants are more or less poisonous when eaten in sufficient quantity, but fortunately, in nearly all such cases, there is something repulsive to the taste or to the smell. Unless one is a botanist or takes the advice of a good botanist, it is safest to let strange plants alone.

BOTANY AND THE COUNTRY SCHOOL.

Wide awake teachers have learned that pupils may advance just as rapidly when properly taught in arithmetic, grammar, spelling, reading, etc., if a few other subjects of a different nature are placed in the course. The ability to observe accurately, we take it for granted will help any person in any kind of business. For cultivating the observing faculty of young persons nothing is better or more convenient than the study of plants.

"The point never to be lost sight of is that if you teach a child to discriminate with the plants in hand and from observation only, between such objects as the simple, heart-shaped, opposite, ex-stipulate stalked leaves of a lilac, and the compound, pinnate, alternate, stipulate leaves of a rose, you lay the foundations of a power for obtaining knowledge which is no way to be measured merely by the amount or kind of information imparted."—*Marshal Ward in Garden and Forest, December, 1890.*

It is not the mere learning of facts about plants that is of most importance, but it is the acquiring a habit of close observation of common things all around us, that is of permanent value. The study of plants is often the means of awakening an interest in dull pupils.

To begin right, they must first observe, handle, dissect, compare and study the specimens. For young pupils, nothing better than the descriptions and comparisons of trees or herbaceous plants can be assigned for compositions—the dread of every youngster in school.

In learning botany, as a rule, no book lessons should be assigned, nor any scientific names thrust upon the pupils till they have studied the objects themselves. After observing a plant or any part of it carefully, they are then prepared to read about it understandingly and are ready and eager for suitable names. In most cases, scientific names are necessary, as they have a definite meaning, each for its place. In case of very young persons they can usually learn these scientific names just as easily as the common ones.

To aid in this work a teacher may plan an exhibition or fair consisting of flowers, leaves, roots, buds, wild fruits, nuts, berries, monstrosities, and perhaps contributions from the vegetable garden, orchard and flower garden. At such time there should be a nice but short lecture, and above all, reports of committees who have examined the objects exhibited.

A part of these things may be kept, and others added to make a museum. If only temporary, for the term, it will be worth all it costs. If it cannot be placed in the school room, place it under a shed, or in the open air near the house where it may be seen and talked about.

There may be short excursions for observation and collecting, and notes made covering the poisonous and the most useful, as well as the most beautiful plants.

There can be a May-day party, with a variety of suitable exercises, a June flower festival, and an exploration of the neighboring woods in season to collect various colored autumn foliage with which to decorate the school room.

Almost any out of the way place may be better than none in which may be planted, by each pupil, one or more different sorts of wild herbs or shrubs, many of which will survive and do very well without much further attention, provided they are near the woods where autumn leaves annually mulch the ground. Here may be collected and planted all sorts of wild vines that can be found, and every kind of native tree that any one knows of. Hints for arbor day have already been given, and interesting programs carried out by many public schools. In such exercises there is, usually, considerable unprofitable sentiment in regard to "sparing that tree," regardless of all conditions. In too many cases the after care of the trees planted is discouraging, and the value of the lessons thus imparted far from satisfactory. The most valuable part of an arbor day will usually be the carrying out of a well planned literary program in the school-house or in the grove. One of this kind was carried out at a forestry convention held in Grand Rapids, January 26, 1888. At that convention children represented various kinds of native trees, each of whom enumerated his own good qualities. The text for most of this program appeared in the Michigan Agricultural Report for 1888; also in the *Prairie Farmer* soon after; also in *Arbor Day*, a book containing many valuable hints, edited by Hon. R. W. Furnas, of Nebraska; also in the *Arbor Day Manual*, by Hon. C. R. Skinner, Deputy Supt. of Public Instruction, Albany, N. Y.

In order to secure profitable and satisfactory results from teaching botany, two requisites are necessary, viz.: 1st. The teacher must have been properly taught, and have the rare skill necessary to incite interest in the subject. 2d. He must have the support of the school directors. Without both of these, there is little use in placing botany on the program.

Again, it may be well to add, that a frequent change of teachers in a country district, as is usually the custom, will be fatal to anything in the line of permanent planting of wild gardens.

A pamphlet entitled "The New Botany," containing hints on teaching the subject, may be obtained from the author, Dr. W. J. Beal.

LIST OF MICHIGAN PLANTS WHICH ARE ADMITTED TO THE UNITED STATES PHARMACOPŒIA.

The following species, 54 in all, are admitted to the United States pharmacopœia. When eaten, many of them are poisonous:

Acorus Calamus, L. Sweet Flag.
Agropyrum repens, Beauv. Couch-Grass.
Apocynum cannabinum, L. Indian Hemp.
Arctostaphylos Uva-ursi, Spreng. Bearberry.
Arctium Lappa, L. Burdock.
Artemisia Absinthium, L. Wormwood.
Aspidium Filix-mas, Swz. Male Fern.
Brassica alba, Boiss. White Mustard.
" *nigra*, Koch. Black Mustard.
Cannabis sativa, L. Hemp.
Carum Carui, L. Caraway.
Castanea sativa, Mill., var. *Americana*, Gray. Chestnut.
Chelidonium majus, L. Garden Celandine.
Chenopodium ambrosioides, L., var. *anthelminticum*, Gray. Wormseed.
Chimaphila umbellata, Nutt. Pipsissewa.
Cimicifuga racemosa, Nutt. Black Snakeroot. Black Cohosh.
Cornus florida, L. Flowering Dogwood.
Cypripedium pubescens, Willd. Yellow Lady's Slipper.
Datura Stramonium, L. Stramonium.
Euonymus atropurpureus, Jacq. Waahoo.
Eupatorium perfoliatum, L. Boneset.
Gaultheria procumbens, L. Wintergreen.
Geranium maculatum, L. Cranesbill.
Hamamelis Virginiana, L. Witch-Hazel.
Hedeoma pulegioides, Pers. American Pennyroyal.
Humulus Lupulus, L. Common Hop.
Hydrastis Canadensis, L. Golden Seal.
Hyoscyamus niger, L. Black Henbane.
Inula Helenium, L. Elecampane.
Iris versicolor, L. Blue Flag.
Juglans cinerea, L. Butternut.
Juniperus communis, L. Juniper.
Linum usitatissimum, L. Flax.
Lobelia inflata, L. Indian Tobacco. Lobelia.
Marrubium vulgare, L. Horehound.
Mentha piperita, L. Peppermint.
" *viridis*, L. Spearmint.
Phytolacca decandra, L. Pokeweed. Scoke.
Podophyllum peltatum, L. Mandrake.
Polygala Senega, L. Senega. Seneca Snakeroot.
Prunus serotina, Ehrh. Wild Black Cherry.
Quercus alba, L. White Oak.
Rubus villosus, Ait. Blackberry.
Rumex crispus, L. Curled Dock. Narrow-leaved Dock.
Sambucus Canadensis, L. Elder.
Sanguinaria Canadensis, L. Blood-root.

Sassafras officinale, Nees. Sassafras.
Scutellaria lateriflora, L. Skullcap.
Solanum Dulcamara, L. Bittersweet.
Tanacetum vulgare, L. Tansy.
Taraxacum officinale, Weber. Dandelion.
Ulmus fulva, Michx. Slippery Elm. Red Elm.
Veronica Virginica, L. Culver's Physic.
Xanthoxylum Americanum, Mill. Prickly Ash.

LIST OF MEDICINAL PLANTS NOT OFFICINAL.

The following plants, 124 species in all, are often used as domestic remedies:

Abies balsamea, Miller. Balsam Fir.
Acer rubrum, L. Red Maple.
Achillea Millefolium, L. Yarrow.
Actæa alba, Bigel. White Cohosh.
" *spicata*, L., var. *rubra*, Ait. Red Cohosh.
Agrimonia Eupatoria, L. Agrimony.
Aletris farinosa, L. Colic-root.
Allium Canadense, Kalm. Wild Garlic.
Alnus incana, Willd. Speckled or Hoary Alder.
" *serrulata*, Willd. Smooth Alder.
Ambrosia artemisiæfolia, L. Ragweed.
Anagallis arvensis, L. Common Pimpernel.
Angelica atropurpurea, L. Angelica.
" *hirsuta*, Muhl. Angelica.
Anemone nemorosa, L. Wind-flower.
Anthemis Cotula, DC. May-weed.
Aralia hispida, Vent. Wild Elder.
" *racemosa*, L. Spikenard.
Arisæma triphyllum, Torr. Indian Turnip.
Artemisia vulgaris, L. Mugwort.
Asarum Canadense, L. Wild Ginger. Canada Snake-root.
Asimina triloba, Dunal. Papaw.
Asclepias Cornuti, Decaisne. Common Milkweed. Silkweed.
" *incarnata*, L. Swamp Milkweed. White Indian Hemp.
" *tuberosa*, L. Pleurisy-Root.
Asparagus officinalis, L. Asparagus.
Aspidium marginale, Swz. Marginal Shield Fern.
Asplenium Filix-foemina, Bernh. Lady Fern.
Baptisia tinctoria, R. Br. Wild Indigo.
Berberis vulgaris, L. Barberry.
Cassia Marilandica, L. Wild Senna.
Caulophyllum thalictroides, Michx. Blue Cohosh.
Ceanothus Americanus, L. New Jersey Tea.
Celastrus scandens, L. Woody Bittersweet.
Chelone glabra, L. Snake-head.
Cichorium Intybus, L. Chicory.
Cicuta maculata, L. Water-Hemlock.
Clematis Virginiana, L. Common Virgin's-Bower.
Collinsonia Canadensis, L. Horse-Balm. Stone-root.
Conium maculatum, L. Poison Hemlock.
Coptis trifolia, Salisb. Goldthread.
Corallorhiza odontorhiza, Nutt. Coral-root.
Cypripedium parviflorum, Salisb. Smaller Yellow Lady's Slipper.
Epigæa repens, L. Trailing Arbutus.
Epilobium angustifolium, L. Great Willow-herb.
Erechtites hieracifolia, Raf. Fireweed.
Erigeron annuus, Pers. Daisy Fleabane.
" *Canadensis*, L. Canada Fleabane.
Euphorbia corollata, L. Large-flowering Spurge.
Frasera Carolinensis, Walt. American Columbo.

Galium Aparine, L. Cleavers.
" *triflorum*, Michx. Sweet-scented Bedstraw.
Gentiana Andrewsii, Griseb. Closed Gentian.
" *crinita*, Frœl. Fringed Gentian.
Geum rivale, L. Water Avens.
Gillenia trifoliata, Moench. Indian Physic.
Gnaphalium polycephalum, Michx. Common Everlasting.
Helenium autumnale, L. Sneeze-weed.
Hepatica acutiloba, DC. Sharp-lobed Hepatica. Liver-leaf.
" *triloba*, Chaix. Round-lobed " "
Heracleum lanatum, Michx. Cow-Parsnip.
Heuchera Americana, L. Alum-root.
Hypericum perforatum, L. St. John's-wort.
Ipomœa pandurata, Meyer. Man-of-the-Earth.
Jeffersonia diphylla, Pers. Rheumatism-root. Twin-leaf.
Larix Americana, Michx. Tamarack.
Ledum latifolium, Ait. Labrador Tea.
Leonurus Cardiaca, L. Motherwort.
Lindera Benzoin, Blume. Spice-bush.
Liriodendron Tulipifera, L. Tulip-tree.
Lobelia syphilitica, L. Great Lobelia.
Lycopodium clavatum, L. Common Club-Moss.
Malva rotundifolia, L. Low Mallow.
Melilotus alba, Lam. Sweet Clover.
Menispermum Canadense, L. Moonseed.
Menyanthes trifoliata, L. Buckbean.
Mitchella repens, L. Partridge-berry. Squaw-vine.
Morus rubra, L. Red Mulberry.
Nasturtium Armoracia, Fries. Horseradish.
" *officinale*, R. Br. Water-Cress.
" *palustre*, DC. Marsh-Cress.
Nepeta Cataria, L. Catnip.
" *Glechoma*, Benth. Ground Ivy.
Nymphœa odorata, Ait. Sweet-scented Water-Lily.
Œnothera biennis, L. Evening Primrose.
Oxalis Acetosella, L. Wood-Sorrel.
" *cornieulata*, L., var. *stricta*, Sav. Yellow Wood-sorrel.
Polygala polygama, Walt. Bitter Polygala.
Polygonatum biflorum, Ell. Smaller Solomon's Seal.
" *giganteum*, Dietrich. Great Solomon's Seal.
Polygonum acre, HBK. Water Smartweed.
" *Hydropiper*, L. Smartweed.
Polypodium vulgare, L. Polypody.
Populus balsamifera, L. Balsam Poplar.
" *tremuloides*, Michx. American Aspen.
Ptelea trifoliata, L. Hop-tree.
Pteris aquilina, L. Common Brake.
Ranunculus acris, L. Tall Crowfoot.
" *sceleratus*, L. Cursed Crowfoot.
" *septentrionalis*, Poir. Creeping Crowfoot.
Rhus glabra, L. Smooth Sumach.
" *Toxicodendron*, L. Poison Ivy.
" *venenata*, DC. Poison Sumach.
Rumex Britannica, L. Great Water-Dock.
" *obtusifolius*, L. Bitter Dock.
Salix alba, L. White Willow.
Sanicula Marylandica, L. Sanicle. Black Snakeroot.
Saponaria officinalis, L. Bouncing Bet.
Sarracenia purpurea, L. Pitcher-Plant.
Scrophularia nodosa, L., var. *Marilandica*, Gray. Figwort.
Senecio aureus, L. Life-root. Squaw-weed.
Spiræa tomentosa, L. Hardhack.
Symplocarpus fœtidus, Salisb. Skunk Cabbage.
Taxus Canadensis, Willd. Ground Hemlock.
Teucrium Canadense, L. Wood Sage.
Thuya occidentalis, L. American Arbor Vitæ. White Cedar.

Trillium erectum, L. Birthroot.
Triosteum perfoliatum, L. Horse-Gentian.
Tussilago Farfara, L. Coltsfoot.
Urtica dioica, L. Common Nettle.
Verbascum Thapsus, L. Common Mullein.
Veronica officinalis, L. " Speedwell.
Viburnum Opulus, L. Cranberry-tree.
" *prunifolium*, L. Black Haw.

CATALOGUE.

Range of species north or south has been indicated by the following abbreviations at the right: S.—1st, 2d and 3d tiers of counties. C.—From 3d tier of counties northward to Houghton Lake region. N.—Remainder of the Lower Peninsula. L. P.—Lower Peninsula. U. P.—Upper Peninsula. Th.—Whole State so far as known. In a few instances S. E. and S. W. have been used to indicate the southeastern and southwestern parts of the Lower Peninsula. In case of rare or local species, we have given all the localities known, but for more common ones have usually indicated only the range and relative frequency. Throughout the catalogue B. & K. refer to notes of H. C. Beardslee and Chas. A. Kofoid. Keweenaw Co., F., refers to notes of O. A. Farwell. All plants which have been collected within ten miles of Lansing are indicated by an asterisk.

I. RANUNCULACEÆ. Crowfoot Family.

1. CLEMATIS, L. Virgin's-Bower.

*1. **C. Virginiana, L.** Common Virgin's-Bower. Th.

Frequent.

2. ANEMONE, L. Anemone. Wind-flower.

2. **A. parviflora, Michx.** U. P.

Dr. Lyons; Asa Gray; Pic river, Lake Superior,—Macoun. Rare.

3. **A. multifida, DC.**

Mackinaw,—Whitney Cat.; mouth of Saginaw R.,—Winchell Cat.; Lake Superior,—Gray; Frankfort; shore of Grand Traverse Bay, and Torch Lake near the landing,—E. J. Hill; 8 miles below Rock Harbor, Isle Royal,—Porter.

*4. **A. cylindrica, Gray.** Long-fruited Anemone. L. P.

Poor soil. Infrequent.

*5. **A. Virginiana, L.** Th.

Frequent.

*6. **A. Pennsylvanica, L.** Th.

On low ground along streams. The handsome, white flowers are sometimes over two inches in diameter. Common.

*7. **A. nemorosa, L.** Wind-flower. Wood Anemone. Th.

Early and very pretty. Flowers sometimes bright rose color. Leaves frequently with five or more lobes, hairy. Common.

3. HEPATICA, Dill. Liver-leaf. Hepatica.

*8. **H. triloba, Chaix.** Th.

Less frequent than the following, at least in the center.

*9. **H. acutiloba**, DC. Th.

This species is very common on beech and maple land, while *H. triloba* prefers oak soil. No transition forms have been seen.

4. ANEMONELLA, Spach.

*10. **A. thalictroides**, Spach. Rue-Anemone. C. & S.

Quite local through the center. Flowers very pretty, white, sometimes pink. Found usually on oak soil.

5. THALICTRUM, Tourn. Meadow-Rue.

*11. **T. dioicum**, L. Early Meadow-Rue. Th.

Common, along river banks.

*12. **T. purpurascens**, L. Purplish M.-Rue. Th.

The flowers vary from white to deep purple, the fertile ones occasionally bearing stamens. Wet meadows. Common.

6. RANUNCULUS, L. Crowfoot. Buttercup.

*13. **R. circinatus**, Sibth. Stiff Water-Crowfoot. Th.

Bear River, Petoskey,—E. J. Hill; Ann Arbor,—Allmendinger Cat.; Huron R.,—Lyons; etc. The common form in L. P. Frequent.

14. **R. aquatilis**, L., var. **trichophyllus**, Gray. Common White Water-Crowfoot.

Not observed in E. and S. Black Lake, Cheboygan Co.,—B. & K.; Keweenaw Co.,—F.

15. **R. Cymbalaria**, Pursh. Sea-side Crowfoot.

South Haven,—L. H. Bailey. Rare.

*16. **R. multifidus**, Pursh. Yellow Water-Crowfoot. Th.

Flowers an inch and three-eighths in diameter and full—double have been seen. Ponds and slow streams. Perennial by rooting from the nodes of floating stems after flowering. The young plants rooting in mud are pubescent so far as observed in many parts of the State. Common.

17. **R. ambigens**, Watson. Water Plantain Spearwort.

Dr. Lyons. Not observed in C. and S. St. Clair Co.,—A. F. Foerste.

18. **R. Flammula**, L., var. **intermedius**, Gray.

Keweenaw Co.,—F.

19. var. **reptans**, E. Meyer. Creeping Spearwort. N. & U. P.

Infrequent except northward, and not seen in the center of the State. Sandy shore of Black Lake, Cheboygan Co.,—B. & K.

20. **R. rhomboideus**, Goldie.

On light sand: our earliest spring flower. Muir and Palo in Ionia county; Lake Superior,—Can. Cat. Prairies, Mich.,"—Gray. Rare.

*21. **R. abortivus**, L. Small-flowered Crowfoot. Th.

Common.

22. var. **micranthus**, Gray.

North shore of Lake Superior,—Agassiz; Keweenaw Co.,—F.

*23. **R. sceleratus**, L. Cursed Crowfoot. Th.

Ditches and low ground. Exceedingly variable, stems sometimes two inches in diameter. Frequent.

*24. **R. recurvatus**, Poir. Hooked Crowfoot. Th.

Woods in rich soil. Common.

*25. **R. fascicularis**, Muhl. Early Crowfoot.

Flowers sometimes double, or with reversion of essential organs to leaves. Hills and sandy plains. Infrequent, from the center of the State southward.

*26. **R. septentrionalis**, Poir. Th.

Frequent and variable.

*27. **R. Pennsylvanicus**, L. f. Bristly Crowfoot. Th.

Frequent.

[R. hispidus, Hook.

N. shore, L. Superior,—Gray's Man., 6th Ed. May be looked for in this State.]

28. **R.** BULBOSUS, L. Bulbous Crowfoot or Buttercups.
Sault Ste. Marie,—Porter. Keweenaw Co.,—F.

29. **R.** ACRIS, L. Tall Crowfoot or Buttercups. Th.
"Classed by Hooker f. as indigenous."—Watson. So. Haven; Macomb Co.; Flint; Huron Shore,—Winch. Cat.; and Lake Superior. Gradually spreading over the State. Infrequent.

7. ISOPYRUM, L.

*30. **I. biternatum,** Torr. & Gray. C. & S.
Early and pretty. Often mistaken for Rue-Anemone, the latter is easily distinguished, however, by its dahlia-like roots. Very common on "beech and maple" land, but not on oak.

8. CALTHA, L. MARSH MARIGOLD.

*31. **C. palustris,** L. Th.
In swamps. Frequently called "Cowslip," and eaten in spring for greens. Very common.

9. COPTIS, Salisb. GOLDTHREAD.

*32. **C. trifolia,** Salisb. Three-Leaved Goldthread. Th.
Bogs and coniferous woods. Common.

10. AQUILEGIA, Tourn. COLUMBINE.

*33. **A. Canadensis,** L. Wild Columbine. Th.
Frequent.

11. CIMICIFUGA, L. BUGBANE.

34. **C. racemosa,** Nutt. Black Snakeroot. Black Cohosh.
S. E.,—Winch. Cat.; Jackson,—University Herb; U. P.,—Burt. Rare in Michigan.

12. ACTÆA, L. BANEBERRY. COHOSH.

*35. **A. spicata, L., var. rubra,** Ait. Red Baneberry. Th.
Frequent.

*36. **A. alba,** Bigelow. White Baneberry. Th.
Moist woods and hillsides. Frequent.

13. HYDRASTIS, Ellis. ORANGE-ROOT. YELLOW PUCCOON.

*37. **H. Canadensis,** L. Golden Seal. C. & S.
Rich, moist woods. Rather local.

14. NIGELLA, L.

38. **N.** DAMASCENA, L. Fennel-flower.
Escaped from gardens. Infrequent.

II. MAGNOLIACEÆ. MAGNOLIA FAMILY.

15. LIRIODENDRON, L. TULIP-TREE.

*39. **L. Tulipifera,** L. C. & S.
A large sized tree, frequent at Ionia, Saranac, Lansing and southward, but not seen north of Grand river valley. Formerly common but becoming infrequent.

III. ANONACEÆ. CUSTARD-APPLE FAMILY.

16. ASIMINA, Adans. NORTH AMERICAN PAPAW.

*40. **A. triloba,** Dunal. Common Papaw. C. & S.
A low tree, fruit edible. Frequent in the valleys of the Grand and Maple rivers, where it probably reaches its N. limit. Common southward.

IV. MENISPERMACEÆ. Moonseed Family.

17. MENISPERMUM, L. Moonseed.

*41. **M. Canadense, L.**
Woods and moist thickets. Frequent.

V. BERBERIDACEÆ. Barberry Family.

18. BERBERIS, L. Barberry.

*42. **B. vulgaris, L.** Common Barberry.
Flint, etc. Sometimes escaped from cultivation.

19. CAULOPHYLLUM, Michx. Blue Cohosh.

*43. **C. thalictroides,** Michx. Pappoose-root. Th.
Common in L. P.

20. JEFFERSONIA, Barton. Twin-leaf.

*44. **J. diphylla,** Persoon. Rheumatism-root. C. & S.
An early spring plant. Infrequent.

21. PODOPHYLLUM, L. May-Apple. Mandrake.

*45. **P. peltatum, L.** C. & S.
Roots drastic, an article of commerce. Ripe fruit often eaten. Very common.

VI. NYMPHÆACEÆ. Water-Lily Family.

22. BRASENIA, Schreber. Water-Shield.

*46. **B. peltata, Pursh.** L. P.
Greenville, Ionia, Ann Arbor, Fife Lake, Oscoda. Infrequent.

23. NELUMBO, Tourn. Sacred Bean.

47. **N. lutea,** Pers. Yellow Nelumbo. Water Chinquapin. S.
River Rouge, south of Detroit; Mill Pond, Vicksburg,—Tuthill. River Raisin at Monroe, where it is abundant. Perhaps introduced by the Indians. Local.

24. NYMPHÆA, Tourn. Water-Nymph. Water-Lily.

48. **N. odorata,** Aiton. Sweet-scented Water-Lily.
Petoskey,—E. J. Hill. A form with pink flowers is found in Otsego lake, Otsego county. Infrequent.

*49. **N. reniformis,** DC. Tuber-bearing Water-Lily. Th.
In all our ponds and slow streams. Flowers large and delicately beautiful, fragrant.

25. NUPHAR, Smith. Yellow Pond-Lily. Spatter-Dock.

*50. **N. advena,** Aiton, f. Th.
In company with water-lilies, but often a dirty plant—seeming to delight in filth. Common.

51. var. **minus,** Morong.
Long Lake, Cheboygan Co.,—B. & K. Baldwin,—Dr. Beal

52. **N. Kalmianum,** Ait.
"Sag. Bay & S. W,"—Winch. Cat.; S. tier of counties,—Wright's Cat.; N. shore of Lake Superior,—Agassiz. Rare.

VII. SARRACENIACEÆ. Pitcher-Plants.

26. SARRACENIA, Tourn. Side-saddle Flower.

*53. **S. purpurea,** L. Side-saddle Flower. Huntsman's Cup.
Common in sphagnous swamps. Can be grown in the house, where it always attracts attention as a "curiosity," though all the swamps in the neighborhood be full of it.

VIII. PAPAVERACEÆ. Poppy Family.

27. SANGUINARIA, Dill. Blood-root.

*54. **S. Canadensis**, L. Th.

The white flowers appear in early spring, and are sometimes 2½ inches in diameter. Common.

28. STYLOPHORUM, Nutt. Celandine Poppy.

55. **S. diphyllum**, Nutt. C. & S.

Rich woods, Oceana county and southward. Flower orange-yellow, over two inches in diameter. Local.

29. CHELIDONIUM, L. Celandine.

*56. **C. majus**, L. Celandine.

Lebanon, Clinton Co., "well established,"—Van Vleck.

30. PAPAVER, Tourn. Poppy.

57. **C. somniferum**, L. Common Poppy.

Occasional. Escaped from cultivation.

IX. FUMARIACEÆ. Fumitory Family.

31. ADLUMIA, Raf. Climbing Fumitory.

58. **A. cirrhosa**, Raf. Th.

Hemlock woods in vicinity of Houghton Lake; Grand Rapids,—Miss Clark; So. Haven; Marquette,—E. J. Hill. Not common.

32. DICENTRA, Borkh. Dutchman's Breeches.

*59. **D. Cucullaria**, DC. Dutchman's Breeches. L. P.

From Frankfort southward. Frequent.

*60. **D. Canadensis**, DC. Squirrel Corn. L. P.

From Frankfort southward. Frequent.

33. CORYDALIS, Vent.

61. **C. glauca**, Pursh. Pale Corydalis. Th.

Grand Haven; Clare Co.; L. Sup.; etc. Infrequent except northward. Oscoda; Alger's camp, Alcona Co.

62. **C. aurea**, Willd. Golden Corydalis.

Not noticed in the center of the L. P., where the preceding species is also rare; frequent northward; in the U. P. common.

X. CRUCIFERÆ. Mustard Family.

34. DENTARIA, Tourn. Toothwort. Pepper-root.

*63. **D. diphylla**, L. Th.

Common.

*64. **D. laciniata**, Muhl. Th.

Keweenaw county and southward. Common.

65. **D. maxima**, Nutt.

Bluffs along Black river near Abbottsford—C. K. Dodge, the only station known in the State.

35. CARDAMINE, Tourn. Bitter Cress.

*66. **C. rhomboidea**, DC. Spring Cress. Th.

Common.

*67. var. **purpurea**, Torr. Th.

An early spring flower.

*68. **C. pratensis**, L. Cuckoo Flower. Th.
Bogs. Rare S., frequent in C., and common N.

*69. **C. hirsuta**, L. Small Bitter Cress. Th.
New Buffalo,—Wheeler; near Black lake, Cheboygan county,—B. & K.; Keweenaw county,—F.

36. ARABIS, L. Rock Cress.

*70. **A. hirsuta**, Scop. Th.
River banks. Infrequent.

*71. **A. lævigata**, Poir. Th.
River banks. Infrequent.

*72. **A. Canadensis**, L. Sickle-pod.
Fields and rocky woods. Not common.

*73. **A. perfoliata**, Lam. Tower Mustard. Th.
Fields. Infrequent.

74. **A. confinis**, Watson.
Dry banks. Hubbardston; Flint; Macomb Co.; etc. Keweenaw Co.,—F. Not common.

75. **A. lyrata**, L. Th.
Sandy fields, Hubbardston. So. Haven; Flint; Petoskey; U. P.,—Whitney Cat. Infrequent.

*76. **A. dentata**, T. & G. C. &. S.
Low lands along Grand river and southward. Not common.

37. DRABA, Dill. Whitlow-Grass.

77. **D. incana**, L., var. **arabisans**, Watson.
Shores of the Gr. Lakes. Mackinac,—G. H. Hicks. Infrequent.

78. **D. Caroliniana**, Walt. C. & S.
Ionia Co. and southward. Rare.

*79. **D. nemorosa**, L.
"Fort Gratiot and northwestward."—Gray. Collected by Dr. Pitcher. Infrequent.

80. **D.** verna, L. Whitlow-Grass. S.
Agricultural College grounds; Detroit,—Dr. Lyons. Rare.

38. ALYSSUM, Tourn.

*81. **A.** calycinum, L.
Hubbardston, Ionia, Flint, Lansing, etc., a recently introduced plant, becoming common in many localities. Door-yards and waste places.

39. CAMELINA, Crantz. False Flax.

82. **C.** sativa, Crantz. Th.
Road-sides and waste places. Flint; Ann Arbor; Macomb Co.; Sturgis; Keweenaw Co.,—F. Not common.

40. NASTURTIUM, R. Br. Water-Cress.

*83. **N.** officinale, R. Br. True Water-Cress.
Ionia; Ann Arbor; South Haven; etc. Frequent in brooks.

84. **N. obtusum**, Nutt.
Keweenaw Co.,—F.

*85. **N. palustre**, DC. Marsh Cress. Th.
Frequent.

*86. var. **hispidum**, Fisch. & Meyer. Th.

87. **N. lacustre**, Gray. Lake Cress. C. & S.
From Fish Cr. and Maple R. southward. Infrequent.

*88. **N.** ARMORACIA, Fries. Horseradish.
Used in spring as a condiment. Escaped from gardens into waste places. Frequent.

41. BARBAREA, R. Br. WINTER CRESS.

89. **B. vulgaris,** R. Br. Yellow Rocket. Common Winter Cress. Th.
So. Haven; Ann Arbor—Allmendinger Cat.; Macomb county; Hubbardston; and N. into the U. P. where it is indigenous and frequent.

90. var. **stricta,** Regel.
Keweenaw Co.,—F.

42. HESPERIS, Tourn. ROCKET.

91. **H.** MATRONALIS L. Dame's Violet.
Escaped from cultivation at Cassopolis,—Wheeler; Shore of Lake Huron,—T. & G., Flora of N. Am.

43. ERYSIMUM, Tourn. TREACLE MUSTARD.

*92. **E. cheiranthoides,** L. Worm-seed Mustard.
Gratiot Co.; Grayling,—Hicks; Cheboygan county,—B. & K. Keweenaw Co.,—F.

44. SISYMBRIUM, Tourn. HEDGE MUSTARD.

93. **S. humile,** Meyer.
Isle Royal,—Gillman; Mackinac,—G. H. Hicks; Macomb county; Grand Haven, etc. Infrequent.

94. **S. canescens,** Nutt. Tansy Mustard. Th.
Shores of Great Lakes, etc. Pitcher, Houghton, Winchell, *et al.* Barry county,—L. H. Bailey. Infrequent.

*95. **S.** OFFICINALE, Scop. Hedge Mustard. Th.
Road-sides and wet places. Frequent.

45. BRASSICA, Tourn. MUSTARD.

*96. **B.** SINAPISTRUM, Boiss. English Charlock. Th.
A bad weed, becoming too frequent.

*97. **B.** ALBA, Boiss. White Mustard. C. & S.
Infrequent.

*98. **B.** NIGRA, Koch. Black Mustard. C. & S.
Common.

99. **B.** CAMPESTRIS, L. Turnip.
Keweenaw Co.,—F.

46. CAPSELLA, Medic. SHEPHERD'S PURSE.

*100. **C.** BURSA-PASTORIS, Moench. Th.
The commonest of weeds.

47. THLASPI, Tourn. PENNYCRESS.

*101. **T.** ARVENSE, L. Field Pennycress or Mithridate Mustard.
Ann Arbor,—Allmendinger Cat.; "Shores of Lake Huron,"—Gray; Rare.

48. LEPIDIUM, Tourn. PEPPERWORT. PEPPERGRASS.

*102. **L. Virginicum,** L. Wild Peppergrass. Th.

103. **L. intermedium,** Gray.
Keweenaw Co.,—F.

104. **L.** CAMPESTRE, R. Br. S. E.
Macomb Co., and Detroit. Infrequent.

49. CAKILE, Tourn. SEA-ROCKET.

105. **C. Americana,** Nutt. American Sea-Rocket. Th.
Shores of the great lakes. Common.

XI. CAPPARIDACEÆ. Caper Family.

50. POLANISIA, Raf.

106. **P. graveolens, Raf.**
Shores of great lakes; South Haven: Detroit; Put-in-Bay; etc. Not rare.

XII. CISTACEÆ. Rock-rose Family.

51. HELIANTHEMUM, Tourn. Rock-rose.

*107. **H. Canadense, Michx.** Frost-weed. Th.
Frequent.

52. HUDSONIA, L.

108. **H. tomentosa, Nutt.** Th.
"Shores of great lakes,"—Gray; S. Mich.,—Winch. Cat.; L. Sup.,—Can. Cat.; Oscoda. Frequent.

53. LECHEA, Kalm. Pinweed.

*109. **L. major, Michx.** C. & S.
Common on poor soil.

110. **L. minor, L.**
Pointe-aux-Pins, Lake Superior,—Dawson; AuSable,—Dr. Beal.

XIII. VIOLACEÆ. Violet Family.

54. VIOLA, Tourn. Violet. Heart's-ease.

*111. **V. pedata, L.** Bird-foot Violet. Th.
Common on light sand; our finest species. N. to "British Am., lat. 55°."—Torr. & Gr., Fl. N. Am.

112. **V. palmata, L.** Common Blue Violet.
Frequent on hills about Ionia.—E. F. Smith.

*113. var. **cucullata, Gray.**
Very common and variable.

114. **V. sagittata, Aiton.** Arrow-leaved Violet. Th.
Rare in some sections, common in others. Howard City and Baldwin,—Dr. Beal. Keweenaw Co.,—F.

115. **V. Selkirkii, Pursh.** Great-spurred Violet. U. P.
Gillman, Gray, *et al.* A high northern plant. Keweenaw Co.,—F.

*116. **V. blanda, Willd.** Sweet White Violet. Th.
Low ground. Common and variable.

*117. var. **palustriformis, Gray.**
Towar's swamp near Lansing; Cheboygan Co.,—B. & K; Shores of Barron lake, Cass Co.; Keweenaw Co.,—F.

*118. var. **renifolia, Gray.**
Cheboygan Co.—B. & K. Keweenaw Co.,—F.

119. **V. lanceolata, L.** Lance-leaved V.
W. Harrisville; Glade Tp.; Kalkaska Co.; Roscommon Co.; L. Sup., etc. Rare.

120. **V. rotundifolia, Michx.** Round-leaved Violet. U. P.
Sugar Island,—Winch. Cat.; Michigan,—Gray.

*121. **V. pubescens, Aiton.** Downy Yellow V. Th.
Beech woods. Common.

*122. **V. Canadensis, L.** Canada V. Th.
Abundant on "beech and maple" land, but seldom, or never found under oaks.

*123. **V. striata,** Aiton. Pale V. Th.
Keweenaw Co.,—F. Southward. Common.

*124. **V. rostrata,** Pursh. Long-spurred V. C. & S.
Well distributed and frequent.

*125. **V. canina,** L., var. **Muhlenbergii,** Gray. Th.
Common.

126. var. **puberula,** Watson, in herb.
Keweenaw Co.,—F. Alcona Co.; Frankfort.

127. **V.** TRICOLOR, L. Pansy. Heart's-ease.
Keweenaw Co.,—F.

55. SOLEA, Spreng, in part. GREEN VIOLET.

*128. **S. concolor,** Ging. C. & S.
Hubbardston; Ann Arbor,—Allm. Cat.; etc. Scarce and local. Near Grand Rapids,—Miss E. J. Cole.

XIV. CARYOPHYLLACEÆ. PINK FAMILY.

56. DIANTHUS, L. PINK. CARNATION.

*129. **D.** DELTOIDES, L. Maiden Pink.
College grounds.

57. SAPONARIA, L.

*130. **S.** OFFICINALIS, L. Bouncing Bet. Soapwort. Th.
Waste places and roadsides. Old Mission,—E. J. Hill; and common in C. & S.; Keweenaw Co.,—F.

*131. **S.** VACCARIA, L. Th.
Muir; S. Mich.,—Wright Cat.; etc. Sparingly introduced. Keweenaw Co.,—F.

58. SILENE, L. CATCHFLY. CAMPION.

132. **S. stellata,** Aiton. Starry Campion. S.
Dr. Wright. Constantine,—Wheeler.

133. **S. Virginica,** L. Fire Pink. Catchfly.
Winchell Cat.; Keweenaw Co.,—F. Open woods, Lake Huron,—Todd; Islands in Detroit River,—Maclagan, Canadian Catalogue.

*134. **S. antirrhina,** L. Sleepy Catchfly.
Common.

135. **S.** ARMERIA, L. Sweet-William Catchfly.
Baldwin,—Dr. Beal.

*136. **S.** NOCTIFLORA, L. Night-flowering C. Th.
Frequent in cultivated grounds.

59. LYCHNIS, Tourn. COCKLE.

137. **L.** VESPERTINA, Sibth. Evening Lychnis.

*138. **L.** GITHAGO, Lam. Corn Cockle. L. P.
In wheat fields, but easily eradicated by sowing clean seed-wheat. Common.

*139. **L.** CORONARIA, L. Mullein Pink.
Keweenaw county; Grand Traverse,—A. B. Lyons.

60. ARENARIA, L. SANDWORT.

*140. **A.** SERPYLLIFOLIA, L. Thyme-leaved Sandwort. Th.
Sandy fields. Common.

141. **A. Michauxii**, Hook, f. Th.

S. Michigan,—Wright Cat.; Macomb Co.; Montcalm Co: L. Sup.,—Can. Cat. Constantine; Three Rivers; Alcona Co.; Crystal Lake, Benzie Co.

*142. **A. lateriflora**, L. Th.

"From lat. 40° to the Arctic Sea,"—Torrey & Gray, in Flora N. Am." Rather common in C., and quite pretty.

61. STELLARIA, L. Chickweed. Starwort.

*143. **S.** media, Smith. Common Chickweed. Th.

Gardens and fields. A very abundant and hardy little weed, which has been seen in blossom every month in the year. In fact, even in mid-winter, a few warm days are enough to set it growing.

*144. **S. longifolia**, Muhl. Long-leaved Stitchwort. Th.

Low ground. Common.

145. **S. longipes**, Goldie. Long-stalked Stitchwort. N. & U. P.

"Gros Cap, L. Mich., abundant in pure sand,"—Winch. Cat.; Lake Superior,—Dr. A. B. Lyons. Rare.

*146. **S.** graminea, L.

Introduced from Europe. College grounds; Ypsilanti,—O. A. Farwell.

147. **S. uliginosa**, Murr. Swamp S. U. P.

Dr. Lyons. Infrequent.

148. **S. crassifolia**, Ehrh.

Dr. Lyons. Carson City, July 5, 1881,—C. F. Wheeler. Rare.

149. **S. borealis**, Bigelow. Northern S. U. P.

Point au Barques, L. Huron, and Isle aux Train, L. Sup,—Gillman; also, Gray in Manual, and Can. Cat. Isle Royale,—A. E. Foote. Infrequent.

62. CERASTIUM, L. Mouse-Ear Chickweed.

150. **C.** viscosum, L. Larger Mouse-ear C. Th.

Not common.

*151. **C.** vulgatum, L. Mouse-ear Chickweed. Th.

Common.

152. **C. nutans**, Raf. Th.

Macomb county; Flint; Lyons, etc. Found on low grounds from Louisiana to Hudson's Bay. Rare

153. **C. arvense**, L. Field Chickweed. Th.

Lake Superior,—Can. Cat.; Mackinac,—G. H. Hicks. Infrequent.

154. var. **oblongifolium**, Holl. & Britt.

S. Mich.,—Winch. Cat.; wet woods close to Amherstburgh, Ont.; Macoun.

63. SAGINA, L. Pearlwort.

155. **S. procumbens**, L.

Champion, Mich.,—E. J. Hill.

156. **S. nodosa**, Fenzl. U. P.

"L. Sup, and northward,"—Gray; Isle Royale,—Whitney's Cat; Keweenaw Co.,—F.; Isle Royale,—F. E. Wood.

64. SPERGULA, L. Spurrey.

157. **S.** arvensis, L. Corn Spurrey.

Dr. Wright, Dr. Clark. Introduced from Europe.

[Stellaria borealis, Big., var. alpestris, Gray.

Pic Island, Thunder Bay, Lake Superior,—Macoun, Canadian Cat.]

XV. PORTULACACEÆ. PURSLANE FAMILY.

65. PORTULACA, Tourn. PURSLANE.

*158. **P. OLERACEA, L.** Common Purslane. Th.

Very tenacious of life—a vile weed in gardens. Very common.

66. CLAYTONIA, Gronov. SPRING-BEAUTY.

*159. **C. Virginica, L.** Th.

An early and very pretty spring flower. Common.

160. **C. Caroliniana, Michx.**

Only found in the northern part of the State. Frankfort, Mich.,—E. J. Parker; Mackinac, July, '88, in fruit,—G. H. Hicks; Keweenaw Co.,—F.; Alpena,—C. A. Davis.

XVI. HYPERICACEÆ. ST. JOHN'S-WORT FAMILY.

67. HYPERICUM, Tourn. ST. JOHN'S-WORT.

*161. **H. Ascyron, L.** Great St. John's-wort. Th.

South Haven; Ann Arbor; Ft. Gratiot; Macomb Co.; Ionia; Stanton; Hubbardston; Crystal Lk.; Flint; Ontonagon River,—Whitney Cat. Grand Rapids,—Sones; Keweenaw Co.,—F. Occurs at wide intervals and in small patches.

162. **H. Kalmianum, L.** Kalm's St. J. Th.

Along the lakes; more common northward. S. Mich.,—Wright Cat.; Fort Gratiot,—Winch. Cat.; Petoskey; etc.

*163. **H. prolificum, L.** Shrubby St. J. Th.

A low, compact shrub, with a profusion of bright yellow blossoms, from July to September. Frequent from C. southward.

164. **H. ellipticum, Hook.**

Ann Arbor,—Miss Clark; L. Sup.,—Gray; Keweenaw Co.,—F.; Carp River,—Porter. Infrequent.

*165. **H. PERFORATUM, L.** Common St. J. Th.

Ionia; Flint; etc.; Keweenaw Co.,—F. Infrequent. A bad weed in the Eastern States, but not troublesome in Michigan.

*166. **H. maculatum, Walt.** Th.

Common.

*167. **H. mutilum, L.** Th.

Common.

*168. **H. Canadense, L.** Th.

Ionia Co.; Macomb Co.; Flint; Drummond's Island,—Winch. Cat. Occasional.

*169. var. **majus, Gray.** Th.

St. Clair Co.,—Fœrste; Flint; Fruitport and Old Mission,—E. J. Hill; L. Sup.,—Gray.

170. var. **minimum, Chois.**

Keweenaw Co.,—F.

68. ELODES, Adans. MARSH ST. JOHN'S-WORT.

*171. **E. campanulata, Pursh.** Th.

Common.

XVII. MALVACEÆ. MALLOW FAMILY.

69. MALVA, L. MALLOW.

*172. **M. ROTUNDIFOLIA, L.** Common Mallow. Th.

Keweenaw Co.,—F. Southward. Common.

*173. **M.** SYLVESTRIS, L. High M. L. P.
Occasional.

*174. **M.** CRISPA, L. Curled M.
Dr, Clark. Infrequent.

*175. **M.** MOSCHATA, L. Musk M. Th.
Keweenaw Co.,—F. Southward. Not rare.

*176. **M.** ALCEA L.
Lansing; adventive on the College grounds.

61. SIDA, L.

177. **S.** NAPÆA, Cav. S.
Kalámazoo, R. R. track,—Tuthill. Rare.

62. ABUTILON, Tourn. INDIAN MALLOW.

*178. **A.** AVICENNÆ, Gært. Velvet-Leaf. C. & S.
Roadsides and river banks. Very common in places, and, along with *Datura Stramonium*, forming regular thickets.

63. HIBISCUS, L. ROSE-MALLOW.

179. **H. Moscheutos,** L. Swamp Rose-Mallow. C. & S.
Monroe; Flint; Put-in-Bay, Lake Erie; St. Joseph,—V. Willoughby; Detroit,—D. H. Campbell; Saugatuck,—Tuthill. Rare.

*180. **H.** TRIONUM, L. Bladder Ketmia. C. & S.
S.—Dr. Wright; Ann Arbor,—Winch. Cat.; Flint. Rare.

XVIII. TILIACEÆ. LINDEN FAMILY.

64. TILIA, Tourn. LINDEN. BASSWOOD.

*181. **T. Americana,** L. Basswood. Linden. Th.
Abundant in C. & S., common in Emmet Co., and frequent in U. P., "Especially in Ontonagon Valley,"—Whitney Cat.

XIX. LINACEÆ. FLAX FAMILY.

65. LINUM, Tourn. FLAX.

*182. **L. Virginianum,** L. S.
Ann Arbor,—Dr. Lyons; S. Mich.,—Wright Cat.; Lenawee Co.,—G. F. Comstock. Infrequent.

183. **L. sulcatum,** Riddell. S.
Dr. Wright. University Herb. Rare.

184. **L.** USITATISSIMUM, L. Common Flax.
Dr. Clark, and Dr. Wright; Keweenaw Co.,—F. Escaped from cultivation. Infrequent.

XX. GERANIACEÆ. GERANIUM FAMILY.

66. GERANIUM, Tourn. CRANESBILL.

*185. **G. maculatum,** L. Wild Cranesbill. C. & S.
"Canada to Florida."—Torr. & Gr., Fl. N. Am. Common.

186. **G. Robertianum,** L. Herb Robert. Th.
Put-in-Bay, Lake Erie; Montcalm Co.; Saginaw Bay; Mackinac, and Drummond's Is.,—Winch. Cat.; L. Sup.—Whitney's Cat. Common around the Gr. Lakes, but seldom seen in the interior.

*187. **G. Carolinianum**, L. Th.

Macomb Co.; Clinton Co., etc. Rare in S. & C., abundant in vicinity of Farwell, Clare Co., thence N. to L. Superior.

*188. **G. PUSILLUM**, L.

Flint,—Dr. Clark; Benzie Co.,—Dr. Beal; Constantine,—Wheeler. Adventive.

67. ERODIUM, L'Her. STORKSBILL.

189. **E. CICUTARIUM**, L'Her. Storksbill. C. & S.

Oceana county; Ionia county; Kalamazoo, etc. Not yet common.

68. FLŒRKEA, Willd.

*190. **F. proserpinacoides**, Willd. False Mermaid.

Ionia; Hubbardston; Flint, etc. Not rare but usually overlooked. A delicate little herb in damp woods.

69. OXALIS, L. WOOD-SORREL.

191. **O. Acetosella**, L. Common Wood-Sorrel. Th.

Macomb county; and "L. Sup. and northward,"—Gray. Rare in S. Peninsula.

192. **O. violacea**, L. Violet W. S. E.

Winchell Cat. Rare.

*193. **O. corniculata**, L., var. **stricta**, Sav. Yellow W. Th.

Marquette Co.,—Burt's MS., etc., etc. Southward. Common.

70. IMPATIENS, L. BALSAM. JEWEL-WEED.

*194. **I. pallida**, Nutt. Pale Touch-me-not. Th.

Macomb Co.; Ionia Co.; Sugar Is.,—Winch. Cat., etc. Much rarer than the next.

*195. **I. fulva**, Nutt. Spotted T. Th.

Keweenaw Co.,—F. Southward.

XXI. RUTACEÆ. RUE FAMILY.

71. XANTHOXYLUM, L. PRICKLY ASH.

*196. **X. Americanum**, Mill. Northern Prickly Ash. Toothache-tree. L. P.

Everywhere along streams and on low ground.

72. PTELEA, L.

*197. **P. trifoliata**, L. Hop-tree. Shrubby Trefoil. C. & S.

Very abundant on the low, rocky, islands in the western end of Lake Erie, and frequent along river banks and the shore of the Gr. Lakes. Occurs in the interior as far north as Montcalm Co. Does not occur at Flint, and is not mentioned in Dr. Cooley's MS. Cat., but is given by Dr. Wright.

XXII. ILICINEÆ. HOLLY FAMILY.

73. ILEX, L. HOLLY.

*198. **I. verticillata**, Gray. Black Alder. Winterberry. Th.

Low grounds. The bright red berries are very noticeable in swamps during early winter.

74. NEMOPANTHES, Raf. MOUNTAIN HOLLY.

*199. **N. fascicularis**, Raf. Th.

Borders of swamps. S. Mich.,—Wright Cat.; Ionia Co.; Montcalm Co.; Flint; Macomb Co.; and northward. Frequent.

XXIII. CELASTRACEÆ. STAFF-TREE FAMILY.

75. CELASTRUS, L. STAFF-TREE. SHRUBBY BITTER-SWEET.

*200. **C. scandens**, L. Wax-work. Climbing Bitter-sweet. Th.

Frequent.

76. EUONYMUS, Tourn. SPINDLE-TREE.

*201. **E. atropurpureus**, Jacq. Waahoo. Burning-Bush. C. & S.

Low river-banks. Well distributed, but nowhere very common.

*202. **E. Americanus**, L., var. **obovatus**, T. & G. Strawberry Bush. C. & S.

Trailing. Common.

XXIV. RHAMNACEÆ. BUCKTHORN FAMILY.

77. RHAMNUS, Tourn. BUCKTHORN.

*203. **R. alnifolia**, L'Her. Th.

Common.

78. CEANOTHUS, L. NEW JERSEY TEA. RED-ROOT.

*204. **C. Americanus**, L. New Jersey Tea. Th.

Sandy woods, rarely on beech and maple land. Frequent.

205. **C. ovatus**, Desf.

Dr. Pitcher; also east shore L. Huron, E. Ont., and L. Sup.,—Can. Cat.; Cheyboygan Co.,—B. & K.; Alcona Co.; Grayling; Oscoda.

XXV. VITACEÆ. VINE FAMILY.

79. VITIS, Tourn. GRAPE.

*206. **V. bicolor**, Le Conte. Summer Grape. C. & S.

Lyons; Stanton; Crystal Lk., Montcalm Co.; Flint; Ann Arbor,—Winch. Cat.; S. Mich.,—Wright Cat., etc. Infrequent S.

*207. **V. riparia**, Michx. Th.

Common along our rivers; infrequent in the pine region, where *V. bicolor* is very abundant. Flowers very fragrant, filling the air with odor. The small, glaucous fruit is sometimes eaten.

80. AMPELOPSIS, Michx. VIRGINIAN CREEPER.

*208. **A. quinquefolia**, Michx. Th.

Common.

XXVI. SAPINDACEÆ. SOAPBERRY FAMILY.

81. ÆSCULUS, L. HORSE-CHESTNUT. BUCKEYE.

209. **Æ. glabra**, Willd. Ohio Buckeye. Fetid B. S.

River bottoms, Lenawee Co.,—Prof. Beal; and probably in other localities in the southern tier of counties.

82. ACER, Tourn. MAPLE.

210. **A. Pennsylvanicum**, L. Striped Maple. N. & U. P.

Abundant in U. P.,—Whitney; common at Petoskey, and occasional as far S. on the Huron shore as Alcona Co.,—Winchell Cat.; in the interior as far as Houghton lake.

*211. **A. spictatum**, Lam. Mountain Maple. C. N. & U. P.

Common in U. P.; Alcona Co.,—Winch. Cat.; Crystal Lake, Montcalm Co.

*212. **A. saccharinum**, Wang. Rock or Sugar Maple. Th.

Frequent in the U. P., and abundant in the lower, forming extensive groves, either alone or in connection with beech.

*213. var. **nigrum**, T. & Gr. Black Sugar Maple. Th.

Along with the preceding, and much resembling it. Distinguished best by its prominent stipules and downy leaves. Common.

*214. **A. dasycarpum**, Ehrh. White or Silver Maple. C. & S.

Low ground along rivers. Common.

*215. **A. rubrum**, L. Red or Swamp M. Th.

On low ground and along streams. Very common.

83. NEGUNDO, Mœnch. Ash-leaved Maple. Box-Elder.

*216. **N. aceroides**, Mœnch. Th.

River banks. A small, handsome tree, with glaucous green twigs, ash-like leaves, and pendant flowers and keys. West of Lake Superior, and north to Saskatchewan Valley,—Macoun, Canadian Catalogue. Frequent in Grand River Valley.

84. STAPHYLEA, L. Bladder-Nut.

*217. **S. trifolia**, L. American Bladder-nut. Th.

Marquette Co., and southward,—Burt. Frequent along river banks in L. P.

XXVII. ANACARDIACEÆ. Cashew Family.

85. RHUS, L. Sumach.

*218. **R. typhina**, L. Staghorn Sumach. Th.

Seldom very large; less common than the next.

*219. **R. glabra**, L. Smooth S. Th.

Very common in C., and nearly, or quite, as large as *R. typhina*. The trunk occasionally 5–10 in. in diameter. These two species are much alike, and, pubescence aside, one might easily be mistaken for the other. It is no stretch of imagination to believe that such closely allied species, and there are many such, are descended from a common stock. Indeed, one can scarcely believe otherwise if he studies plants extensively.

*220. **R. copallina**, L. Dwarf S. C. & S.

Abundant in the pine country on light soil.

*221. **R. venenata**, DC. Poison Sumach or Dogwood. L. P.

Common in swamps and poisonous to the touch. A low shrub, with smooth, grayish bark, and dull, white fruit in clusters. Green Lake, G. Traverse Co. and southward.

*222. **R. Toxicodendron**, L. Poison Ivy. Poison Oak. Th.

Tall-climbing, often to tops of forest trees; stems occasionally several inches in diameter.

223. **R. Canadensis**, Marsh. Fragrant Sumach. Th.

Less frequent than other members of the genus. Found chiefly on bluffs and sandy hills through the middle counties of the L. P. "N. to the Saskatchawan,"—Torr. & Gr., Fl. N. Am.

XXVIII. POLYGALACEÆ. Milkwort Family.

86. POLYGALA, Tourn. Milkwort.

*224. **P. paucifolia**, Willd. Flowering Wintergreen. Fringed Polygala. Th.

Common on pine land; the large, rose-purple flowers very beautiful.

*225. **P. polygama**, Walt. Th.

Sandy soil. Ionia, Clinton, Montcalm, and counties southward. Infrequent. Abundant near Quinnesec, Menominee Co.,—E. J. Hill.

*226. **P. Senega**, L. Seneca Snakeroot. Th.

Banks; not common.

227. var. **latifolia**, Torr. & Gray.

Hubbardston; Flint. Rare.

*228. **P. sanguinea**, L. C. & S.

Belding; Ionia; Flint; Macomb Co., etc. Local, but usually abundant when found at all.

229. **P. cruciata**, L. S.

S. Mich..—Wright Cat. Rare.

*230. **P. verticillata**, L. C. & S.

Flint; Macomb Co.; Wayne Co., etc. Common in some places, rare in others. The fresh roots have the smell of wintergreen, or *Spiræa lobata*.

XXIX. LEGUMINOSÆ. PULSE FAMILY.

87. BAPTISIA, Vent. FALSE INDIGO.

*231. **B. tinctoria**, R. Br. Wild Indigo. C. & S.

Woodward Lake, Ionia Co.; Flint; Macomb Co.; Ann Arbor,—Winch. Cat.; etc. Abundant in places but not well distributed; much commoner than the next species.

232. **B. leucantha**, Torr. & Gr. S.

Calhoun Co.,—Winch. Cat.; Ann Arbor,—Allmendinger Cat.; Shore of Lake Erie,—Goldie, Canadian Catalogue. Rare.

88. LUPINUS, Tourn. LUPINE.

*233. **L. perennis**, L. Wild Lupine. C. & S.

Abundant in light sand. Flowers, a fine blue-purple, varying to light pink, in May and June forming great masses of color.

234. var. **occidentalis**, Watson.

Benton Harbor,—Wheeler.

89. TRIFOLIUM, Tourn. CLOVER. TREFOIL.

*235. **T.** ARVENSE, L. Rabbit-foot or Stone Clover.

Becoming naturalized in light soil.

*236. **T.** PRATENSE, L. Red Clover. Th.

Meadows and fields.

*237. **T.** MEDIUM, L. Mammoth Clover. Zigzag Clover.

238. **T. stoloniferum**, Muhl. Running Buffalo Clover.

Kalamazoo,—Tuthill. Introduced (?)

*239. **T. repens**, L. White Clover. Th.

Meadows, pastures, and road-sides. Very common.

*240. **T.** HYBRIDUM, L. Alsike Clover. Th.

Escaped from cultivation.

241. **T.** AGRARIUM, L. Yellow or Hop Clover. Th.

Port Huron,—C. K. Dodge; Keweenaw Co.,—F. Not common.

*242. **T.** PROCUMBENS, L. Low Hop-C. C. & S.

Ionia, etc. Blossoms bright yellow and very pretty. Infrequent.

90. MELILOTUS, Tourn. MELILOT. SWEET CLOVER.

*243. **M.** OFFICINALIS, Willd. Yellow Melilot. C. & S.

Rare.

*244. **M.** ALBA. Lam. White Melilot. L. P.

More common than the preceding, but only occasional.

91. MEDICAGO, Tourn. MEDICK.

245. **M. SATIVA, L.** Lucerne. Alfalfa. C. & S.

Escaped from cultivation in a few places.

*246. **M. LUPULINA, L.** Black Medick. Nonesuch. L. P.

Waste places. Mackinac; Jackson; Ann Arbor, etc.; forming patches.

92. AMORPHA, L. FALSE INDIGO.

247. **A. canescens,** Nutt. Lead-Plant. S.

W. Mich.,—Winch. Cat.; Ann Arbor,—Prof. M. W. Harrington; Kalamazoo; Tuthill; Klinger Lake; Barron Lake,—Wheeler. Rare.

93. TEPHROSIA, Pers. HOARY PEA.

248. **T. Virginiana,** Pers. Goat's Rue. Catgut. C. & S.

Clinton Co.; Montcalm Co.; Macomb Co.; Livingston Co.,—Miss Clark, etc. On light sand. Infrequent.

94. ROBINIA, L. LOCUST-TREE.

*249. **R. Pseudacacia,** L. Common Locust or False Acacia.

Escaped from cultivation.

250. **R. viscosa,** Vent. Clammy Locust.

Escaped from cultivation at Ionia,—Wheeler.

95. ASTRAGALUS, Tourn. MILK-VETCH.

*251. **A. Canadensis,** L. Th.

Put-in-Bay; Ann Arbor; Macomb Co.; Orchard Lk.; Montcalm Co.; river bank, North Lansing; Shiawassee Co.,—G. H. Hicks; and northward. Well distributed, but infrequent.

*252. **A. Cooperi,** Gray. C. & S.

Dr. A. B. Lyons; Cooley MS.; Park Lake, Clinton Co.,—Bailey; clay bank 1½ miles N. of the College,—Wheeler, 1891. Rare.

96. DESMODIUM, Desv. TICK-TREFOIL.

*253. **D. nudiflorum,** DC. C. & S.

Crystal Lk.; Montcalm Co.; Flint; Macomb Co.; S. Mich.,—Wright, Cat., etc., Common.

*254. **D. acuminatum,** DC. C. & S.

Woodlands. Very common.

*255. **D. paucifiorum,** DC. S.

Mont Lk.,—Miss Clark in Winch. Cat. Rare.

*256. **D. rotundifolium,** DC. C. & S.

Hubbardston; Ionia; Flint; So. Haven; Macomb Co.; Ann Arbor,—Allmend. Cat. etc. Infrequent.

257. **D. canescens,** DC. S.

Ann Arbor,—Allmend. Cat.; S. West,—Wright, Cat. Rare.

*258. **D. cuspidatum,** Torr. & Gray. C. & S.

Hubbardston; Flint; Ann Arbor; Macomb Co.; S. Mich.,—Wright, etc. Usually on oak land. Frequent.

259. **D. Illinoense,** Gray.

University campus, Ann Arbor, Mich., 1885,—Dr. W. J. Beal.

*260. **D. Dillenii,** Darlingt. C. & S.

Oak woods. Hubbardston; Flint; Macomb Co.; S. Mich.,—Wr. Cat.; Mont Lk.,—Miss Clark, etc. Frequent. Downy forms of this species were called *D. viridiflorum*, *Beck*, in the first edition of this catalogue.

[HEDYSARUM BOREALE, Nutt.

N. shore of L. Superior,—Gray's Man. May be looked for within our limits.]

*261. **D. paniculatum**, DC. C. & S.
Oak woods. Hubbardston; Flint; Macomb Co.; S. Haven; S. Mich.,—Wr. Cat., etc. Frequent.

*262. **D. Canadense**, DC. Th.
Hubbardston, and probably farther N.; Flint; Ann Arbor,—Allmendinger Cat. and Winch. Cat., etc. Flowers early. Frequent.

263. **D. sessilifolium**, Torr. & Gray. S.
"Michigan,"—Gray; S. Mich.,—Winch. Cat.; University Herb., Niles,—Ames; Greenville. Rare.

264. **D. rigidum**, DC. C. & S.
Hubbardston; Flint; Macomb Co.; Ann Arbor and S. W.,—Winch. Cat. Infrequent.

265. **D. ciliare**, DC. S.
Dr. Wright. Rare.

*266. **D. Marilandicum**, F.Boott. C. & S.
Dry hills; Ionia, and southward; near Park Lake, Clinton Co.,—Dr. Beal. Infrequent.

97. LESPEDEZA, Michx. Bush-Clover.

*267. **L. violacea**, Pers. S.
Ann Arbor,—Miss Clark; S. W.,—Wright. Infrequent.

*268. **L. reticulata**, Pers. C. & S.
Dry woods and fields. Common.

269. **L. Stuvei**, Nutt. S.
Winchell Cat.; Gray in Manual. Rare.

270. var. **intermedia**, Wats.
Gray's Man.

*271. **L. polystachya**, Michx. C. & S.
Common.

*272. **L. capitata**, Michx. C. & S.
Abundant in old fields; prefers light sand. Common.

273. **L. angustifolia**, Ell. C. & S.
In the same situation, and along with the preceding two. Infrequent.

98. VICIA, Tourn. Vetch. Tare.

274. **V.** sativa, L. Common Vetch. Tare.
Detroit.—Dr. Lyons; Springwells,—Henry Gillman; Port Huron,—C. K. Dodge; Keweenaw Co.,—Farwell. Infrequent.

275. **V. Cracca**, L. S.
S. Mich.—Wright Cat.; Ann Arbor,—Prof. M. W. Harrington. Rare or local.

*276. **V. Caroliniana**, Walter. C. & S.
Dry soil. Common.

*277. **V. Americana**, Muhl. Th.
Ann Arbor; Ionia; Montcalm Co., etc.; N. to Lake Sup. Much rarer than the preceding, and very pretty. Spreads rapidly in C., along railroads and highways, and acts like an immigrant.

99. LATHYRUS, Tourn. Vetchling. Everlasting Pea.

278. **L. maritimus**, Bigelow. Beach Pea. Th.
All around the Gr. Lakes, but seldom or never seen in the interior. Shore of Higgins Lake,—G. H. Cannon.

*279. **L. ochroleucus**, Hooker. Th.
Hillsides and dry uplands. Keweenaw Co.,—F., and southward. Infrequent.

280. **L. venosus**, Muhl. Th.
Ionia C.; Clinton Co.; Flint; Macomb Co.; Ann Arbor, etc. Northward to Keweenaw Co.,—F. Infrequent.

*281. **L. palustris**, L. Th.

Ann Arbor; Ionia; Bay City; Antrim Co.; Petoskey to L. Sup. This and the next are both common in C., growing in marshes along with *Apios tuberosa*, *Campanula aparinoides*, etc.

*282. var. **myrtifolius**, Gray. Th.

Infrequent.

100. APIOS, Boerhaave.

*283. **A. tuberosa**, Moench. Ground-nut. Wild Bean. C. & S.

A curious vine, with edible tubers, and fragrant, chocolate-brown flowers. Common.

101. STROPHOSTYLES, Ell.

284. **S. angulosa**, Ell. Wild Bean. S.

S. E. along shore, and on the islands of Lake Erie, and shore of Lake Michigan at So. Haven,—Bailey. Probably not much farther north, and not found in the interior.

102. AMPHICARPÆA, Ell. Hog Pea-nut.

*285. **A. monoica**, Nutt. Th.

Fields and woods. Common.

*286. **A. Pitcheri**, T. & G.

Moist woodlands. Hubbardston; Lenawee Co.,—Dr. Beal.

103. CERCIS, L. Red-bud. Judas-tree.

*287. **C. Canadensis**, L. C. & S.

Indigenous throughout the southern part of the State, and as far N. in the west as Grand River valley. Plaster creek, Grand Rapids—Garfield; Ionia—LeValley; banks of Thornapple river. Eaton Co.; Ann Arbor; Adrian; South Haven, etc. This tree is quite frequent in the valley of the river Raisin, 10 miles S. W. of Adrian, in company with *Negundo*, *Gymnocladus*, and *Æsculus glabra*. The largest trees are ten inches in diameter,—Henry Owen.

104. CASSIA, Tourn. Senna.

*288. **C. Marilandica**, L. Wild Senna. C. & S.

Lyons; Grand Haven; Ann Arbor, etc. River banks; a tall weed with bright yellow blossoms. Infrequent.

105. GYMNOCLADUS, Lam. Kentucky Coffee-tree.

*289. **G. Canadensis**, Lam. C. & S.

A slender tree along the river banks as far N. as Maple river, in Clinton Co.; also Fish creek, Montcalm Co.; banks of Grand river, etc. The largest specimen seen was about 60 feet high, and less than a foot in diameter. Farther south a large tree. Infrequent.

106. GLEDITSCHIA, L. Honey-Locust.

290. **G. triacanthos**, L. Three-thorned Acacia. Honey-Locust. S.

Grows along the river Raisin, and is certainly indigenous. Often two feet in diameter,—Dr. Beal, Henry Owen, *et al.* Along the St. Joseph, also, and in other localities in the extreme S. Dundee, Niles,—Wheeler.

XXX. ROSACEÆ. Rose Family.

107. PRUNUS, Tourn. Plum, Cherry, Etc.

*291. **P. Americana**, Marshall. Wild Yellow or Red Plum. Th.

Along our rivers; the fruit either round or oblong, yellow, red, or green, and pleasant or bitter. Along Black River, Cheboygan Co.,—B. & K.

292. **P. pumila**, L. Dwarf Cherry. Sand Cherry. Th.

L. Sup.; Emmet Co.; Houghton Lake; Mecosta Co.; South Haven; Saginaw Bay.—Winchell, etc. Frequent in the N. half of the L. P., but not yet found in the interior S. of Saranac, Ionia Co., where it occurs in a dry glade along with *Synthyris*, *Castilleia*, *Lupinus*, and *Senecio aureus*.

*293. **P. Pennsylvanica**, L.f. Wild Red Cherry. Th.

Very abundant on sandy land in the N. half of the State, but less common southward, where *P. serotina*, takes its place. Occasionally it becomes a good sized tree, 40-50 feet high, a foot and a half in diameter. One such stands by the roadside near Prairie Creek, in Ronald Tp., Ionia Co.

*294. **P. Virginiana,** L. Choke-Cherry. Th.

A shrub or small tree. Very pretty in May by reason of its light green leaves and racemes of white flowers. Common.

*295. **P. serotina,** Ehrh. Wild Black Cherry. Th.

A medium sized timber tree, well known as "Black Cherry." Frequent in C. and S., in places sufficiently so for economic use. Rare in N. and U. P.

108. SPIRÆA. L. Meadow-Sweet.

*296. **S. salicifolia,** L. Common Meadow-Sweet. Th.

In marshes. Common.

297. **S. tomentosa,** L. Hardhack. Steeple-Bush. C. & S.

Grand Rapids,—G. D. Sones; Ionia Co., and southward. A low shrub with fine rose-colored flowers, in dense panicles, and leaves rusty-wooly beneath. Infrequent.

298. **S. lobata,** Jacquin. Queen of the Prairie. S.

"Meadows and prairies, Penn. to Mich.,"—Gray. Occurs only in the S. W. R. R. track, near Augusta, —Prof. Bailey; Calhoun Co.;—University Herb. St. Joseph,—V. Willoughby.

109. PHYSOCARPUS, Maxim. Nine-bark.

*299. **P. opulifolius,** Maxim. Th.

Along streams. A low shrub with recurved branches, white flowers, clusters of reddish pods, and something the habit of red currant but larger.

110. GILLENIA, Moench. Indian Physic.

300. **G. trifoliata,** Moench. Bowman's Root. S.

Winchell Cat. Rare.

111. RUBUS, Tourn. Bramble.

301. **R. odoratus,** L. Purple Flowering-Raspberry. Th.

From Ft. Gratiot (Winchell) northward. Not observed in the interior of the C. & S. Common in N. and U. P.

302. **R. Nutkanus,** Moçino. Salmon-berry. N. & U. P.

Frequent at Petoskey and common farther north.

*303. **R. triflorus,** Richard. Dwarf R. Th.

Frequent.

*304. **R. strigosus,** Michx. Wild Red R. Th.

Variable. Common.

*305. **R. occidentalis,** L. Black R. Thimbleberry. Th.

Hybrids between this and the preceding frequently occur. Common.

*306. **R. neglectus,** Peck.

Hubbardston,.

*307. **R. villosus,** Aiton. Blackberry, Common or High. Th.

Very common in C., covering thousands of acres of waste pine-land to the exclusion of almost everything else. Rare in U. P.

308. **R. Millspaughi,** Britton, n. sp. *Torrey Bulletin,* Dec., 1891, p. 366.

Keweenaw Peninsula,—L. H. Bailey, in *Garden and Forest,* 1892, p. 144.

*309. **R. Canadensis,** L. Dewberry. Low Blackberry. Th.

Extensively trailing—12 feet or more—deep-rooted, hard to exterminate, and troublesome in sandy fields. Fruit ripe about the middle of July, sweeter than that of *R. villosus,* Keweenaw Co.,—F.; Black Lake, Cheboygan Co.,—Wheeler. Frequent.

*310. **R. hispidus,** L. Running Swamp-B. Th.

Very abundant through the C. in the pine country, frequently covering the ground.

112. DALIBARDA, L.

311. **D. repens,** L.

Ann Arbor,—Mary Clark; Macomb Co.,—Cooley. May occur farther north, and perhaps throughout Lake Huron,—Bell, Canadian Catalogue.

113. GEUM, L. Avens.

*312. **G. album**, Gmelin. L. P.

Common.

*313. **G. Virginianum**, L. C. & S.

Common.

314. **G. macrophyllum**, Willd.

Rare in L. P. Cheboygan Co.,—B. & K.; N. Shore of Lake Superior,—Agassiz.

315. **G. strictum**, Aiton. Th.

New Haven; Gratiot Co.; Petoskey, etc.; Keweenaw Co.,—F.; St. Clair Co.,—A. F. Foreste.

*316. **G. rivale**, L. Water or Purple Avens. Th.

Swamps and wet places. Common.

317. **G. triflorum**, Pursh.

Otisco Tp., Ionia Co.,—A. B. Morse; Montcalm Co., near Greenville; the only reported localities in the State.

114. WALDSTEINIA, Willd.

*318. **W. fragarioides**, Tratt. Barren Strawberry. Th.

Livingston Co.,—Winch. Cat.; Ionia; Flint to L. Sup.,—Whitney Cat. Rather local, but abundant when found at all.

115. FRAGARIA, Tourn. Strawberry.

*319. **F. Virginiana**, Mill. Th.

Very common.

*320. var. **Illinoensis**, Gray. Th.

Keweenaw Co.,—F.; and southward. Frequent.

321. **F. vesca**, L. Th.

Occasional in S., frequent in C., and abundant northward, where it seems to take the place of *F. Virginiana*. Moist woodlands and borders of swamps.

116. POTENTILLA, L. Cinque-foil. Five-finger.

*322. **P. arguta**, Ph. Th.

Flowers either white or yellow, generally all in one locality of one color; the same is true of *Moth Mullein;* Ann Arbor; Macomb Co.; Ionia; and N. to Isle Royal. Frequent on light sand; in places common.

*323. **P.** recta, L.

Ypsilanti,—O. A. Farwell; Lansing,—Dr. Beal; Spreading along the T. & A. A. R. R. track between Ann Arbor and Howell Junction,—C. F. Wheeler.

*324. **P. Norvegica**, L. Th.

Common.

325. **P. Pennsylvanica**, L.

L. Superior,—Gray's Man. p. 159; Prof. Ellis, in Canadian Catalogue.

*326. **P. argentea**, L. Silvery Cinque-foil.

Ann Arbor,—Clark and Allmendinger; Alma,—Davis; Inland, Benzie Co.; "Behaves like a weed at Hanover, Mich., running out clover," etc.,—G. E. Simmons. Becoming frequent.

327. **P. frigida**, Villars. U. P.

Dr. Lyons. Rare.

*328. **P. palustris**, Scop. Marsh Five-Finger. Th.

Swamps throughout, but nowhere abundant.

*329. **P. fruticosa**, L. Shrubby Cinque-foil. Th.

Edges of swamps. A low shrub with small, silky leaves, and a profusion of showy yellow blossoms, in August. Ranges N. to Arctic America. Common.

330. **P. tridentata**, Ait. Three-toothed C. N. & U. P.

Barrens of Missaukee Co.; Grayling; "Shores of the Upper Great Lakes,"—Gray; Isle Royal,—Dr. Lyons. Frequent.

331. **P. Anserina,** L. Silver-Weed. Th.

Frequent along the Great Lakes, but rare in the interior. Banks of Higgins Lake,—G. H. Cannon; Baldwin,—W. J. Beal; Otsego Co.,—Guy L. Stewart.

*332. **P. Canadensis,** L. Common C. Five-Finger. Th.

Common.

117. AGRIMONIA, Tourn. Agrimony.

*333. **A. Eupatoria,** L. Common Agrimony. Th.

Dry soil. Common.

334. **A. parviflora,** Ait. Small-flowered A. S. E.

Detroit,—Miss Clark; Macomb Co.; St. Clair Co.,—A. F. Foerste. Infrequent.

118. POTERIUM, L. Burnet.

335. **P. Canadense,** Benth. & Hook. Canadian Burnet. S.

South Haven,—Bailey; Ann Arbor,—Allmendinger. Rare.

119. ROSA, Tourn. Rose.

336. **R. setigera,** Michx. Climbing or Prairie Rose. C. & S.

So. Haven,—Bailey; Jackson Co.,—Winchell; Flint,—Dr. Clark; Macomb Co.,—Cooley; Grosse Isle,—Miss Clark; Belle Isle Park,—Foerste; near Adrian,—Mrs. I. H. Wheeler. Indigenous, but rare or local.

337. **R. Engelmanni,** Watson. N. & U. P.

Indian River, Black Lake (Cheboygan Co.); Mackinaw City; Petoskey,—Wheeler; Keweenaw Co.,—F.

338. **R. blanda,** Aiton. Th.

Ionia; Hubbardston; Flint; Ft. Gratiot,—Winch. Cat. Lake shore, New Buffalo,—Wheeler. Northward to Keweenaw Co.,—F. Common northward, but infrequent south of lat. 43° except along the shore of Lake Michigan.

339. **R. Sayi,** Schwein. N. & U. P.

Oscoda; Keweenaw Co.,—F.; Cheboygan Co.,—B. & K. Infrequent.

340. **R. Arkansana,** Porter. N. & U. P.

Harbor Springs,—Wheeler; Keweenaw Co.,—F. Rare.

341. **R. acicularis,** Lindl. N. & U. P.

Keweenaw Co.,—F.; Mackinac,—Loring; In herb,—Gray; South Shore Lake Superior,—Whitney, 1849; Au Sable; Crawford Co.

*342. **R. Carolina,** L. Th.

Swamps. Common.

*343. **R. Carolina×humilis,** C. F. Wheeler. A supposed hybrid.

Border of a swamp near the Agricultural College.

*344. **R. humilis,** Marsh. Th.

Abundant and pretty. In the C. it is our common wild-rose. Dry soil. A low form on hills about Ionia has narrow leaves, with peduncles and ripe fruit glandular-bristly.

*345. **R. rubiginosa,** L. Sweetbrier. Eglantine. C. & S.

Roadsides. Frequent.

120. PYRUS, L. Pear. Apple.

*346. **P. cornaria,** L. American Crab-Apple. C. & S.

Thickets and along streams; the fine rose colored flowers delightfully fragrant in May. The fruit green and bitter. Common.

*347. **P. arbutifolia,** L.f. Choke-berry. Th.

Hubbardston; New Buffalo,—Wheeler; Harrisville and northward.

*348. var. **melanocarpa,** Hook. Th.

Burt. MS.; Isle Royal,—Whitney's Cat., etc. Frequent in swamps through C.

349. **P. Americana,** DC. American Mountain Ash. N. & U. P.

Ludington, and north along the Michigan shore to Charlevoix; Sault Ste. Marie; and into Canada where it is common; also westward, through U. P.,—Burt, and Whitney.

350. **P. sambucifolia,** Cham. & Schlect.

Mackinac Island,—H. Mann; Keweenaw Co.,—F.

*351. **P. Malus,** L. Cultivated Apple.

Spontaneous in thickets along roadsides.

121. CRATÆGUS, L. Hawthorn. White Thorn.

*352. **C. coccinea,** L. Th.

Common.

*353. var. **mollis,** T. & G. Th.

Frequent in C.; our largest thorn, frequently 20-25 ft. high and a foot in diameter. A tree along the Raisin river in Monroe Co.,—Wheeler; Ontonagon,—Mary H. Clark.

*354. **C. tomentosa,** L. Th.

The form referred to this species is a shrub with large, thick, oval, sharply-serrate leaves, beneath prominently veined, and tapering into a margined petiole; corymbs *very straggling* and *fruit quite small*—¼ in. Infrequent.

*355. **C. punctata,** Jacq.

A shrub or low tree very common in the center of the State. Very variable.

*356. **C. Crus-galli,** L. Cockspur Thorn. S.

Usually a shrub. Used for hedges in the east. Common.

122. AMELANCHIER, Medic. June-berry.

*357. **A. Canadensis,** Torr. & Gray. Shad-bush. Service-berry. Th.

A shrub or small tree. Fruit variable in size and flavor, frequently delicious, and so well known to the birds that one can seldom find it well ripened. Includes vars., *Botryapium* and *rotundifolia*. Common.

*358. var. (?) **oblongifolia,** T. & Gr. Th.

Ionia; Flint; S. Mich.,—Winchell Cat. A low shrub on sandy land. Infrequent.

359. **A. oligocarpa,** Roem. U. P.

Shores of Lake Superior,—Gray's Man.; Keweenaw Co.,—F.

360. **A. alnifolia,** Nutt. N. & U. P.

Presque Isle,—Winchell; Keweenaw Co.,—F. Rare.

XXXI. SAXIFRAGACEÆ. Saxifrage Family.

123. SAXIFRAGA, L. Saxifrage.

361. **S. aizoides,** L. Yellow Mountain-Saxifrage. U. P.

"Northern Michigan."—Gray.

362. **S. tricuspidata,** Retz. U. P.

"Shore of L. Sup. and northward,"—Gray; Isle Royale,—Dr. Lyons and Whitney Cat.

363. **S. Aizoon,** Jacq. U. P.

"Upper Mich.,"—Gray; Isle Royale,—Lyons, and Whitney.

364. **S. Virginiensis,** Michx. Early-S. U. P.

L. Sup.,—Can. Cat.; Keweenaw Co.,—F.

*365. **S. Pennsylvanica,** L. Swamp S. Th.

Bogs. Common.

124. TIARELLA, L. False Mitre-wort.

*366. **T. cordifolia,** L. Th.

Ft. Gratiot; Macomb Co.; Flint; Stanton; and northward. Common in N. & U. P.; rare in C. & S. W.

125. MITELLA, Tourn. Mitre-wort. Bishop's-Cap.

*367. **M. diphylla,** L. Th.

Hillsides in rich woods. Very common.

*368. **M. nuda**, L. Th.

Shaded swamps in *Sphagnum*. Racemes sometimes inclined to be paniculate; seeds brown. A very delicate and pretty little herb, usually growing under tamaracks and along with *Ribes rubrum*, *Chiogenes hispidula*, *Smilacina trifolia*, and *Salix candida*. The scape frequently bears a small leaf, as if to suggest the derivation of this and the preceding from *one* earlier form. Frequent.

126. HEUCHERA, L. Alum-root.

369. **H. Americana**, L. Common Alum-root. C. & S.

Grand Rapids,—Coleman; Ann Arbor,—Winch. Cat.; Monroe Co.,—Wheeler. Rare.

*370. **H. hispida**, Pursh. C. & S.

Common in Grand-Saginaw Valley.

127. CHRYSOSPLENIUM, Tourn. Golden Saxifrage.

*371. **C. Americanum**, Schwein.

So. Haven; Hubbardston; Flint; and northward. Infrequent.

128. PARNASSIA, Tourn. Grass of Parnassus.

372. **P. parviflora**, DC. U. P.

L. Sup.,—Can. Cat.; Grand Island,—Henry Gillman; also, northwest shore of Lake Michigan, in Wisconsin,—Gillman.

373. **P. palustris**, L. U. P.

Drummond's Is.,—Winch. Cat.; "Shore of L. Sup., and northward,"—Gray, from Dr. Pitcher.

*374. **P. Caroliniana**, Michx.

Swamps and wet banks. Rare northward; common in C. & S.

129. RIBES, L. Currant. Gooseberry.

*375. **R. Cynosbati**, L. Gooseberry. Th.

The large berries prickly, but edible. Common.

376. **R. gracile**, Michx. Missouri Gooseberry.

St. Joseph's Island, and Sitting Rabbit,—Winchell's Cat.

*377. **R. oxyacanthoides**, L. Swamp G. Th.

Fruit smooth. Low grounds along Fish Creek and Maple River; Flint; Macomb Co., etc. Northward and shore of Long lake,—B. & K.; Keweenaw Co.,—F.

378. **R. lacustre**, Poir. N. & U. P.

As far south as Houghton Lake; Cheboygan Co.,—B. & K. Common.

379. **R. prostratum**, L'Her. Fetid Currant. C. N. & U. P.

Flint; Isabella Co.; Missaukee Co.; St. Joseph's Is.,—Winch. Cat.; Cheboygan Co.,—B. & K.; Keweenaw Co.,—F. Frequent.

*380. **R. floridum**, L'Her. Wild Black Currant. Th.

Cheboygan Co.—B. & K. Southward. Common.

*381. **R. rubrum**, L., var. **subglandulosum**, Maxim. Red Currant. Th.

Deep swamps and cold woods, under tamaracks. Ann Arbor; Ionia; Stanton, Cheboygan Co.—B. & K. Infrequent.

XXXII. CRASSULACEÆ. Orpine Family.

130. PENTHORUM, Gronov. Ditch Stone-crop.

*382. **P. sedoides**, L. L. P.

Roadsides and ditches; shore of Black Lake, Cheboygan Co.,—B. & K. Frequent.

131. SEDUM, Tourn. Stone-crop. Orpine.

*383. **S. acre**, L. Mossy Stone-crop.

Escaped from cultivation.

*384. **S. Telephium**, L. Live-for-ever. Garden Orpine. C. & S.

Escaped from cultivation.

XXXIII. DROSERACEÆ. Sundew Family.

132. DROSERA, L. Sundew.

*385. **D. rotundifolia**, L. Round-leaved Sundew. Th.

In sphagnous swamps. An insectivorous plant.

386. **D. intermedia**, Hayne., var. **Americana**, DC. Th.

S. Mich.,—Wright. Cat.; Ann Arbor,—Allmendinger Cat.; Grand Rapids,—R. H. Wolcott; Keweenaw Co.,—F.

387. **D. linearis**, Goldie. Slender Sundew. Th.

Livingston Co.; L. Superior,—Dr. Lyons; Keweenaw Co.,—F.; La Pointe.,—D. Houghton; Copper Harbor,—F. E. Wood. Rare.

XXXIV. HAMAMELIDEÆ. Witch-Hazel Family.

133. HAMAMELIS, L. Witch-Hazel.

*388. **H. Virginiana**, L. Th.

The yellow blossoms open in November after the leaves have fallen. The ripe pods burst with a sharp report, scattering the seeds. This is frequently the case with pods of other plants. Common.

XXXV. HALORAGEÆ. Water-Milfoil Family.

134. MYRIOPHYLLUM, Vaill. Water-Milfoil.

*389. **M. spicatum**, L. Th.

Abundant, L. Sup.,—Can. Cat.; etc,; Black Lake, Cheboygan Co.,—B. & K.; Pine Lake, Ingham Co. Common.

*390. **M. verticillatum**, L. L. P.

Hubbardston; Flint; Macomb Co.; S. Mich.,—Wright Cat. Common.

391. **M. heterophyllum**, Michx. C. & S.

Fruitport,—E. J. Hill; Huron R. at Ypsilanti,—Lyons; Macomb Co.,—Cooley. Rare.

392. **M. tenellum**, Bigelow.

Gray's Manual.

393. **M. Farwellii**, Morong, nov. sp.

Bulletin of Torrey Bot. Club, May, '91, p. 146; Pond, Keweenaw Co.,—F.

135. PROSERPINACA, L. Mermaid-weed.

*394. **P. palustris**, L.

In swamps along with *Alopecurus aristulatus* and *Ludwigia palustris*. Keweenaw Co.,—F.; Cheboygan Co.,—B. & K.

136. HIPPURIS, L. Mare's Tail.

395. **H. vulgaris**, L. Th.

L. Sup.,—Can. Cat.; S. Mich.,—Wright Cat.; Keweenaw Co.,—F.; Black River, Cheboygan Co.,—B. & K.; Escanaba,—E. J. Hill. Rare.

396. var. **fluviatilis**, Hart.

Keweenaw Peninsula,—Robbins; Indian River, Cheboygan Co.,—Wheeler.

137. CALLITRICHE, L. Water-Starwort.

397. **C. verna**, L.

Ponds, Macomb Co.,—Cooley; Keweenaw Co.,—F.; Norway,—E. J. Hill.

398. **C. autumnalis**, L.

Flint,—Dr. Clark; L. Superior,—Gray; Alma,—Davis; Sault de Ste. Marie,—Morong.

XXXVI. LYTHRACEÆ. Loosestrife Family.

138. LYTHRUM, L. Loosestrife.

399. **L. alatum,** Pursh. S.

Near Detroit,—Cooley MS.; S. Mich.,—Wright Cat.; Kalamazoo, Tuthill; Malden, Detroit River,—Maclagan, Canadian Catalogue.

139. DECODON, Gmelin. Swamp Loosestrife.

*400. **D. verticillatus,** Ell. L. P.

Crystal Lake, Montcalm Co.; Flint; Birmingham, Oakland Co.; So. Haven, etc. Fife Lake, farthest station north known. Infrequent.

XXXVII. ONAGRACEÆ. Evening-Primrose Family.

140. LUDWIGIA, L. False Loosestrife.

401. **L. alternifolia,** L. Seed-box. S. W.

Dr. Wright; near Detroit,—Dr. Cooley.

402. **L. polycarpa,** Short & Peter. C. & S.

Dr. Pitcher and Dr. Clark. St. Clair Co.,—A. F. Fœrste.

403. **L. palustris,** Ell. Water Purslane. L. P.

Common.

141. EPILOBIUM, L. Willow-herb.

*404. **E. spicatum,** Lam. (**E. angustifolium,** L.) Great Willow-herb. Fire-weed. Th.

Springs up abundantly where forests have been burned over, hence one common name.

*405. **E. lineare,** Muhl.

Hubbardston; Flint; Stanton; and north to L. Sup. Infrequent in C. and rare or not at all in S.

*406. **E. strictum,** Muhl. Th.

Hubbardston; Flint; Ann Arbor; Macomb Co.; northward to Keweenaw Co.,—F. Frequent.

*407. **E. coloratum,** Muhl. Th.

Common.

408. **E. adenocaulon,** Hausk.

Trelease, Revision of Epilobium, p. 95. Keweenaw Co.,—F. Frequent.

409. **E. Hornemanni,** Reichenb. U. P.

"Upper Wisconsin and Michigan."—Gray.

142. ŒNOTHERA, L. Evening Primrose.

*410. **Œ. biennis,** L. Common Evening Primrose. Th.

Common.

411. **Œ. pumila,** L. Th.

Ontonagon Falls,—Whitney Cat.; So. Mich.,—Wr. Cat.; Oscoda, shore Lake Huron. Infrequent.

412. **Œ. fruticosa,** L. Sundrops. Th.

Palo, Ionia Co.; Flint; Macomb Co.; Ann Arbor,—Allmend. Cat.; Keweenaw Co.,—F. Infrequent.

143. GAURA, L.

413. **G. biennis,** L. S.

Dr. Wright. Malden, Ont.,—Maclagan, Canadian Catalogue.

[E. PANICULATUM, Nutt.

Found on the Canadian shore of Lake Huron. May be looked for in Mich.]

144. CIRCÆA, Tourn. Enchanter's Nightshade.

*414. **C. Lutetiana**, L. Th.

Woods. Very common.

*415. **C. alpina**, L. Th.

Woods. Common.

XXXVIII. CUCURBITACEÆ. Gourd Family.

145. ECHINOCYSTIS, Torr. & Gray. Wild Balsam-apple.

*416. **E. lobata**, Torr. & Gray.

Common in low woods along streams. Ionia; So. Haven; Macomb County; Ann Arbor,—Allmend. Cat., etc.

XXXIX. CACTACEÆ. Cactus Family.

146. OPUNTIA, Tourn. Prickly Pear. Indian Fig.

417. **O. Rafinesquii**, Engelm.

Common in Newaygo Co. along the Muskegon R. ("a quite spiny form,"—Engelmann); Cedar Creek Tp.; Muskegon Co.,—Wheeler; and a stunted variety on sand barrens near Greenville,—Mr. Satterlee; also, northward into British Am.,—Engelmann.

XL. FICOIDEÆ. Ice-Plant Family.

147. MOLLUGO, L. Indian-Chickweed.

*418. **M.** verticillata, L. Carpet-weed. C. & S.

Roadsides and sandy fields. Common.

XLI. UMBELLIFERÆ. Parsley Family.

148. DAUCUS, Tourn. Carrot.

419. **D.** Carota, L.

Keweenaw Co.,—F.; "Introduced into the E. part of the State,"—C. K. Dodge; near Grand Rapids,—G. D. Sones.

149. ANGELICA, L.

*420. **A. hirsuta**, Muhl. L. P.

Emmet Co.,—Winch. Cat.; Pontiac; Detroit, etc. Dry banks and open woods. Infrequent.

*421. **A. atropurpurea**, L. Th.

Occasional in S., common in C. & N.; also L. Sup.—Can. Cat.

150. CONIOSELINUM, Fisch.

*422. **C. Canadense**, Torr. & Gray. Hemlock-Parsley. Th.

Ann Arbor,—All. Cat.; Macomb Co.; Flint; Hubbardston and north,—Wheeler. Infrequent.

151. TIEDEMANNIA, DC.

*423. **T. rigida**, Coult. & Rose. Cowbane. C. & S.

Hubbardston; Ann Arbor,—All. Cat., etc. Not much N. of lat. 43°. Infrequent.

152. HERACLEUM, L. Cow-Parsnip.

*424. **H. lanatum**, Michx. Th.

Low ground; tall and coarse. Common.

153. PASTINACA, L. Parsnip.

*425. **P. sativa, L.** Th.
Fields, etc. Infrequent.

154. POLYTÆNIA, DC.

426. **P. Nuttallii, DC.** S.
Dr. Wright, also Gray. Rare.

155. PIMPINELLA, L.

*427. **P. integerrima, Benth. & Hook.** Th.
Dry soil. Very abundant in Grand-Saginaw Valley.

156. CRYPTOTÆNIA, DC. Honewort.

*428. **C. Canadensis, DC.** C. & S.
Low woods. Common.

157. SIUM, Tourn. Water Parsnip.

*429. **S. cicutæfolium, Gmelin.** Th.
Clinton Co.; S. Mich.,—Winch. Cat., etc. Frequent.

158. BERULA, Koch.

430. **B. angustifolia, Koch.** S.
Winchell, and Dr. Gray. Kalamazoo,—Tuthill. Infrequent.

159. ZIZIA, Koch.

*431. **Z. aurea, Koch.**
Low ground. Common.

432. **Z. cordata, DC.** C. & S.
Flint; Put-in-Bay, and S. W.,—Dr. Wright; Barron Lake, Cass Co.,—C. F. Wheeler. Rare.

160. CARUM, L. Caraway.

*433. **C. Carui, L. Caraway.**
Naturalized in many places.

161. CICUTA, L. Water-Hemlock.

*434. **C. maculata, L. Spotted-Cowbane. Beaver-Poison. Musquash Root.** Th.
Low meadows and swamps. Roots tuberous like the dahlia, and very poisonous. Common.

*435. **C. bulbifera, L.** Th.
Swamps. Common.

162. CONIUM, L. Poison Hemlock.

*436. **C. maculatum, L.** Th.
Infrequent in C. & S. Common at Mackinac,—Winch. Cat.

163. CHÆROPHYLLUM, L.

*437. **C. procumbens, Crantz.** C. & S.
Low woods. Frequent in Grand River Valley; Valley of the Raisin river near Dundee,—C. F. Wheeler; Macomb Co.

164. OSMORRHIZA, Raf. Sweet Cicely.

*438. **O. brevistylis, DC.** Th.
"The prevailing species,"—Winchell. Probably true of counties along the Huron shore; Cheboygan Co.,—B. & K.; Keweenaw Co.,—F. Common.

*439. **O. longistylis, DC.** Th.
Common.

165. ERIGENIA, Nutt. Harbinger-of-Spring.

*440. **E. bulbosa, Nutt.** C. & S.

A delicate little plant in low woods, the flowers peeping from under matted leaves in earliest spring, often before the snow is gone. Common.

166. HYDROCOTYLE, Tourn. Water Pennywort.

*441. **H. umbellata, L.**

Woodward Lake, Ionia Co.; S. Mich.,—Wright Cat., etc. Either grows on sandy shores or is wholly aquatic, with floating leaves.

*442. **H. Americana, L.** L. P.

Common in C.

167. ERYNGIUM, Tourn. Eryngo.

443. **E. yuccæfolium, Michx.** Rattlesnake-Master. Button Snakeroot. S. W.

White Pigeon, 1838,—Dr. Wright, in University Herb. Rare.

168. SANICULA, Tourn. Sanicle. Black Snakeroot.

*444. **S. Marylandica, L.** Th.

Oak woods. Common.

*445. var. **Canadensis, Torr.** C. & S.

Hubbardston; Flint; Ann Arbor,—All. Cat., etc. Beech and maple woods. Infrequent.

XLII. ARALIACEÆ. Ginseng Family.

169. ARALIA, Tourn. Ginseng. Wild Sarsaparilla.

*446. **A. racemosa, L.** Spikenard. Th.

Cheboygan Co.,—B. & K.; Keweenaw Co.,—F. Frequent.

*447. **A. hispida, Ventenat.** Bristly Sarsaparilla. Wild Elder.

In a peat bog near the Agricultural College; also on dry clay soil, lot 21, Collegeville, Ingham Co. Apparently not common south of the pine region.

*448. **A. nudicaulis, L.** Wild Sarsaparilla. Th.

Common.

*449. **A. quinquefolia, Decsne. & Planch.** Ginseng. Th.

Sault Ste. Marie; Ludington; Stanton, formerly in great abundance; Hubbardston; Flint; Macomb Co.; southwest,—Wright Cat., etc. Usually rare, but so common in places that it has been dug for profit, and nearly exterminated.

*450. **A. trifolia, Decsne. & Planch.** Ground-nut. Dwarf Ginseng. Th.

Frequent northward to Keweenaw Co.,—F.

XLIII. CORNACEÆ. Dogwood Family.

170. CORNUS, Tourn. Cornel. Dogwood.

*451. **C. Canadensis, L.** Dwarf Cornel. Bunch-berry. Th.

Rare south. Constantine,—Wheeler; Ann Arbor,—G. D. Sones. Northward very common.

*452. **C. florida, L.** Flowering Dogwood. C. & S.

Frequent as far north as Grand-Saginaw Valley, usually as a low tree in oak woods. Frequently blooms when only a bush, 3-4 ft. high.

453. **C. circinata, L'Her.** Round-leaved Dogwood. Th.

Klinger Lake; Hubbardston to Cheboygan Co.—B. & K., and northward to Keweenaw Co.,—F. Infrequent.

*454. **C. sericea, L.** Silky Cornel. Kinnikinnik. C. & S.

Indians use the inner bark for smoking. Frequent.

*455. **C. stolonifera,** Michx. Red-osier. Dogwood. Th.

Marshes, borders of streams. Very common.

*456. **C. Baileyi,** Coulter & Evans. Th.

Petoskey, New Buffalo,—Wheeler; a bundant along E. shore of Lake Michigan on sand dunes; occasional in Cheboygan Co.,—B. & K.; Keweenaw Co.,—F.

*457. **C. stricta,** Lam. Panicled Cornel. L. P.

The white flowers eagerly devoured by partridges. Common.

*458. **C. alternifolia,** L. f. Th.

Banks. Frequent. The dead stems bright yellow. Keweenaw Co.,—F.; rare in Cheboygan Co.,—B. & K.

171. NYSSA, L. Tupelo. Pepperidge. Sour-Gum Tree.

*459. **N. sylvatica,** Marsh. Pepperidge. Tupelo. L. P.

Edges of swamps. Frequent. A small or medium-sized tree. Largest specimens seen, 2 to 3 ft. in diameter. Only one tree detected in Cheboygan Co.,—B. & K.

XLIV. CAPRIFOLIACEÆ. Honeysuckle Family.

172. SAMBUCUS, Tourn. Elder.

*460. **S. Canadensis,** L. Common Elder.

Follows settlements. Common.

*461. **S. racemosa,** L. Red-berried Elder. Th.

More northern in its range than the last. Variety with dissected leaves seen in Clare county.

173. VIBURNUM, L. Arrow-wood. Laurestinus.

462. **V. lantanoides,** Michx. Hobble-bush. American Wayfaring-tree. U. P.

Whitney's Cat. Mr. Whitney found none of the sp. abundant in the U. P.

*463. **V. Opulus,** L. Cranberry-tree. Th.

Swamps and borders of streams. Common.

464. **V. pauciflorum,** Pylaie. U. P.

Dr. Lyons. Gray's Manual. Rare.

*465. **V. acerifolium,** L. Arrow-wood. Dockmackie. L. P.

Frequent in Cheboygan Co.,—B. & K.

*466. **V. pubescens,** Pursh. Downy A. Th.

Common.

*467. **V. cassinoides,** L. Withe-rod. Th.

Macomb Co.; Hubbardston; Stanton; Riverdale, Gratiot Co.; Houghton Lk.; to L. Superior. Commonest sp. about Black Lake,—B. & K. Frequent.

*468. **V. Lentago,** L. Sweet Viburnum. Sheep-berry. Th.

Frequent in C. and S., and northward. Cheboygan Co., infrequent,—B. & K.

469. **V. prunifolium,** L. Black Haw. S.

Dr. Lyons; Kalamazoo,—Tuthill; Barron Lake, Cass Co.,—Wheeler. Rare.

174. TRIOSTEUM, L. Horse-Gentian. Fever-wort.

*470. **T. perfoliatum,** L. L. P.

Clinton Co.; Ionia Co.; Flint; Macomb Co., etc.; Black River, Cheboygan Co., one plant seen by B. & K. Frequent southward.

175. LINNÆA, Gronov. Twin-flower.

*471. **L. borealis,** Gronov. C. N. & U. P.

Very abundant in N. & U. P.; south to Grand river valley, and S. E. to Macomb Co.; Port Huron,—C. K. Dodge.

176. SYMPHORICARPOS, Dill. Snowberry.

472. **S. vulgaris,** Michx. Indian Currant. Coral-berry.

Keweenaw Co.,—F.

473. **S. occidentalis,** Hook. Wolfberry. C. N. & U. P.

Ft. Gratiot, Austin; N. Mich.,—Gray; Port Huron,—Dodge. Rare.

474. **S. racemosus,** Michx. Snowberry. C. N. & U. P.

Along the Great Lakes, Saginaw Bay and Alpena Co.,—Winchell; L. Sup.,—Can. Cat.

475. var. **pauciflorus,** Robbins.

Harbor Springs; Keweenaw Co.,—Dr. Robbins; Hubbardston,—C. F. Wheeler.

177. LONICERA, L. Honeysuckle. Woodbine.

*476. **L. ciliata,** Muhl. Fly-Honeysuckle. Th.

Frequent.

477. **L. cœrulea,** L. Mountain F. U. P.

Dr. Lyons. Keweenaw Co.,—F.; Clifton,—F. E. Wood, in University Herb.

*478. **L. oblongifolia,** Muhl. Swamp F. Th.

Howell Junction,—Wheeler; Macomb Co.; Stanton; Edmore; Isabella Co., etc. More frequent in N. and U. P. Rare in S.

479. **L. involucrata,** Banks. U. P.

Mainland and Isle Royale; Keweenaw Co.,—F.

480. **L. grata,** Aiton. American Woodbine.

Dr. Lyons. Gray's Manual.

481. **L. hirsuta,** Eaton. Hairy Honeysuckle. N. & U. P.

Frequent northward.

*482. **L. glauca,** Hill. Th.

Ionia; Montcalm Co.; Ann Arbor,—All. Cat., etc. Flowers bright yellow to crimson purple; corolla downy or nearly smooth; leaves pubescent or glaucous. Swamps or dry soil. Common.

178. DIERVILLA, Tourn. Bush-Honeysuckle.

*483. **D. trifida,** Moench. Th.

Rocky woods and bluffs. Common.

XLV. RUBIACEÆ. Madder Family.

179. HOUSTONIA, L.

484. **H. cœrulea,** L. Bluets. Innocence.

Keweenaw Point,—Dr. Robbins.

485. **H. purpurea,** L. var. **ciliolata,** Gray. S.

Dr. Wright. Three Rivers,—Wheeler.

486. var. **longifolia,** Gray. Th.

Hastings,—L. H. Bailey; Ionia, common; Clare Co., abundant, etc.; to L. Sup.,—Can. Cat.

180. CEPHALANTHUS, L. Button-bush.

*487. **C. occidentalis,** L. L. P.

Swamps and flooded river bottoms. Common, Cheboygan Co.,—B. & K. Very common southward.

181. MITCHELLA, L. Patridge-berry.

*488. **M. repens,** L. Th

Prefers beech and maple, hemlock, or pine woods, and is seldom found under oaks. Common.

[L. Sullivantii, Gray.

Pic River, Lake Superior,—Macoun. May yet be found in this State.]

182. GALIUM, L. Bedstraw. Cleavers.

*489. **G. Aparine**, L. Cleavers. Goose-Grass. Th.
Common.

*490. **G. pilosum**, Aiton. C. & S.
Frequent as far north as Grand-Saginaw Valley.

*491. **G. circæzans**, Michx. Wild Liquorice. L. P.
Dry woods, Cheboygan Co., rare.—B. & K. Frequent southward.

*492. **G. lanceolatum**, Torrey. Wild Liquorice. Th.
Riverdale, Gratiot Co.; Hubbardston; Flint; Macomb Co.; and S. Mich.—Wr. Cat.; also, L. Superior —Whitney.

*493. **G. boreale**, L. Northern Bedstraw. Th.
Very common.

*494. **G. trifidum**, L., Small Bedstraw. Th.
Bogs. Common.

*495. var. **pusillum**, Gray. Th.
Sphagnous swamps. Common.

*496. var. **latifolium**, Torr. C. & S.
Infrequent.

*497. **G. concinnum**, Torr. & Gray. C. & S.
Flint; Ann Arbor.—All. Cat; Grand Ledge. Rare.

*498. **G. asprellum**, Michx. Rough Bedstraw. Th.
Frequent.

*499. **G. triflorum**, Michx. Sweet-scented Bedstraw. Th.
Frequent in C. & S., and very abundant northward.

XLVI. VALERIANACEÆ. Valerian Family.

183. VALERIANA, Tourn. Valerian.

500. **V. edulis**, Nutt. S. E.
Ann Arbor and Macomb Co. Rare.

*501. **V. sylvatica**, Banks. Th.
Sphagnous swamps, local.

184. VALERIANELLA, Tourn. Corn Salad. Lamb-Lettuce.

502. **V. chenopodifolia**, DC. C. & S.
Flint; Ionia; Lyons, etc. Not common.

503. **V. radiata**, Dufr.
"Mich.,"—Gray; Macomb Co.,—Cooley.

XLVII. DIPSACEÆ. Teasel Family.

185. DIPSACUS, Tourn. Teasel.

504. **D. sylvestris**, Mill. Wild Teasel. C. & S.
Fields and roadsides. Gratiot Co.; Ann Arbor; Detroit; Flint, etc. Infrequent.

XLVIII. COMPOSITÆ. Composite Family.

186. VERNONIA, Schreb. Iron-weed.

[V. altissima, Nutt.
St. Clair Flats,—J. Macoun, Can. Cat.; may be looked for within our limits.]

*505. **V. fasciculata**, Michx. C. & S.

River banks; Ionia Co.; Macomb Co.; Monroe Co.; South Haven,—Bailey. Frequent.

187. EUPATORIUM, Tourn. THOROUGHWORT.

*506. **E. purpureum**, L. Joe-Pye Weed. Trumpet-Weed. Th.

Low grounds. Very variable. Common.

507. **E. sessilifolium**, L. Upland Boneset. S.

Copses. Macomb Co.; S. Mich.,—Winch. Cat.

*508. **E. perfoliatum**, L. Thoroughwort. Boneset. Th.

Low grounds. Common.

*509. **E. ageratoides**, L. White Snake-root. Th.

Woods. Frequent.

510. **E. cœlestinum**, L. Mist-flower.

"Rich soil, Mich."—Gray's Manual.

188. KUHNIA, L.

511. **K. eupatorioides**, L. C. & S.

Ionia Co.; S. Mich.,—Winch. Cat. Infrequent.

189. LIATRIS, Schreb. BUTTON SNAKE-ROOT. BLAZING STAR.

512. **L. cylindracea**, Michx. Th.

Sterile open places; Ionia Co.; Macomb Co. Lenawee Co.,—G. F. Comstock; Grand Rapids to Keweenaw Co.,—F. Not common.

*513. **L. scariosa**, Willd. Blazing-Star. Th.

Rarely the flowers vary to white. Dry soil. Northward to Keweenaw Co.,—F. Frequent.

*514. **L. spicata**, Willd. C. & S.

Low grounds. Ionia Co.; Macomb Co.; near Port Huron,—C. K. Dodge; Kalamazoo,—Tuthill. Infrequent.

190. SOLIDAGO, L. GOLDEN-ROD.

*515. **S. cæsia**, L. L. P.

Rich woods. Frequent.

*516. **S. latifolia**, L. Th.

Moist woods, frequent. All golden-rods furnish bees with pollen and honey, some, however, more abundantly than others.

*517. **S. bicolor**, L. var. **concolor**, Torr. & Gray. Th.

Dry places. Ionia Co.; Flint; Macomb Co.; and northward.

518. **S. macrophylla**, Pursh. U. P.

"Shore of Lake Superior and northward,"—Gray's Manual, 6th edition.

519. **S. Virgaurea**, L., var. **alpina**, Bigel. U. P.

Gray's Manual, 6th edition.

520. **S. humilis**, Pursh.

Frequent at Petoskey; Cheboygan Co.,—Beardslee.

521. var. **Gillmani**, Gray. Th.

Shores of Lake Mich., from New Buffalo to Mackinaw City,—C. F. Wheeler.

*522. **S. uliginosa**, Nutt. Th.

Swamps. Infrequent.

*523. **S. speciosa**, Nutt.

Margin of woods on light soil. Ionia Co.; Flint; Macomb Co., and northward to Keweenaw Co.,—F. Infrequent.

524. var. **angustata**, Torr. & Gray.

Indian River, Cheboygan Co.,—Wheeler.

*525. **S. patula,** Muhl. C. & S.
Borders of swamps. Common.

*526. **S. rugosa,** Mill. Th.
Borders of fields, northward to Thunder Bay,—Macoun. Common.

*527. **S. ulmifolia,** Muhl. L. P.
Borders of woods. Ionia Co.; Flint; S. W.—Winch. Cat. Infrequent.

528. **S. neglecta,** Torr. & Gray.
Swamps. Ionia Co. and northward. Infrequent.

*529. **S. juncea,** Ait. Th.
Meadows and fields, variable. Frequent.

530. var. **scabrella,** Gray.
N. shore of Lake Superior southward.

*531. **S. serotina,** Ait. Th.
Borders of woods. Frequent.

*532. var. **gigantea,** Gray. Th.
Northward to Keweenaw Co.,—F.

*533. **S. Canadensis,** L. Th.
Fields. Our most variable and common golden-rod.

*534. var. **procera.** T. & G.
Common.

*535. **S. nemoralis,** Ait. Th.
Dry sandy soil. Common.

*536. **S. rigida,** L.
Dry, sandy ground; Ann Arbor; Ionia Co.,; Flint, and northward. Infrequent.

537. **S. Ohioensis,** Riddell.
Moist meadows. Ionia Co.; Flint; Macomb Co. to Grand Detour below Sugar Island,—Prof. Porter. Infrequent.

*538. **S. Riddellii,** Frank. S.
Swamps, Ionia Co.; Macomb Co. and southward. Rare.

539. **S. Houghtonii,** Torr. & Gray.
"N. shore of Lake Michigan,"—Gray's Man.; Drummond's Is.,—Winch. Cat.

*540. **S. lanceolata,** L. Th.
Moist soil. Common.

191. ASTER, L. Starwort. Aster.

541. **A. corymbosus,** Ait. Th.
Woods. Infrequent.

*542. **A. macrophyllus,** L. Th.
Woods. Common.

*543. **A. Novæ-Angliæ,** L. Th.
Moist grounds. Frequent.

544. **A. sericeus,** Vent.
S. Mich.,—Winch. Cat., Dr. D. Houghton; north to Keweenaw Co.,—F. Rare.

545. **A. patens,** Ait. S. E.
Dry grounds. Ann Arbor; Macomb Co.

S. Missouriensis, Nutt.
Point Edward, St. Clair river, Ont.,—Jno. Macoun. May be looked for in Mich.]

*546. **A. azureus,** Lindl. C. & S.
Sterile soil. Flint; Ann Arbor; Ionia Co.; Macomb Co. Infrequent.

*547. **A. undulatus,** L. L. P.
Dry copses. Flint; S. Mich.; Cheboygan Co.,—B. & K.; Ionia Co. Common.

*548. **A. cordifolius,** L. Th.
Woods. Common.

*549. **A. sagittifolius,** Willd. Th.
Dry grounds. Frequent.

550. **A. Lindleyanus,** Torr. & Gray. N. & U. P.
"Labrador to Lake Superior,"—Gray's Manual; Mackinaw City,—Wheeler; Keweenaw Co.,—F. Not common.

*551. **A. lævis,** L. L. P.
Border of oak woods. Cheboygan Co.,—B. & K. Common southward.

552. **A. ericoides,** L.
Petoskey,—Wheeler; shores of the Great Lakes.

553. **A. multiflorus,** Ait. C. & S.
Sandy soil. Frequent.

554. **A. dumosus,** L. L. P.
Thickets. Macomb Co.; Petoskey,—Dr. D. Clark; Hubbardston, not common,—Wheeler; Cheboygan Co.,—Beardslee.

*555. **A. vimineus,** Lam. L. P.
Low grounds. Cheboygan Co.,—Beardslee. Frequent southward.

*556. **A. diffusus,** Ait. Th.
Fields. Exceedingly variable. Common.

557. var. **thyrsoideus,** Gray.
Washington, Macomb Co.,—Dr. D. Cooley; and northward.

*558. **A. Tradescanti,** L. L. P.
Low grounds. Flint; Macomb Co. Frequent.

*559. **A. paniculatus,** Lam. Th.
Shady banks. "Polymorphous,"—Gray. Frequent.

560. **A. salicifolius,** Ait.
Moist soil. Flint; Macomb Co., etc., northward. Frequent.

*561. **A. junceus,** Ait. Th.
Tamarack swamps. Ionia Co.; Flint; Macomb Co., etc., northward. Frequent.

*562. **A. puniceus,** L. Th.
Low grounds. Common.

*563 var. **lucidulus,** Gray.
Macomb Co. westward. Abundant.

*564. **A. umbellatus,** Mill. Th.
Moist places.

565 var. **pubens,** Gray.
Upper Mich.,—Gray's Manual; Cheboygan Co.,—Beardslee; Keweenaw Co.,—F.

566. **A. ptarmicoides,** Torr. and Gray. Th.
S. E. Michigan; Macomb Co.; Clarkston,—G. H. Hicks; Keweenaw Co.,—F. Infrequent.

192. ERIGERON, L. Fleabane.

*567. **E. Canadensis,** L. Horse-weed. Butter-weed. Th.
Waste grounds. Common.

568. **E. acris,** L. var. **Drœbachensis,** Blytt. U. P.
'Shores of Lake Superior,"—Gray; Dr. A. B. Lyons; Keweenaw Co.—F.

*569. **E. annuus,** Pers. Daisy Fleabane. Sweet Scabious. Th.
Fields. Common.

*570. **E. strigosus,** Muhl. Daisy Fleabane. Th.
Fields. Common.

571. **E. glabellus,** Nutt. U. P.
Plains. Dr. A. B. Lyons.

572. **E. hyssopifolius,** Michx. U. P.
"Lake Superior, and northward,"—Gray; Dr. Lyons; Keweenaw Co.,—F.

*573. **E. bellidifolius,** Muhl. Robin's Plantain. C. & S.
Moist banks. Frequent.

*574. **E. Philadelphicus,** L. Common Fleabane. Th.
Common.

193. ANTENNARIA, Gærtn. Everlasting.

*575. **A. plantaginifolia,** Hook. Plantain-leaved Everlasting. Th.
Dry fields. Common.

194. ANAPHALIS, DC. Everlasting.

576. **A. margaritacea,** Benth. & Hook. Pearly Everlasting. Th.
Montcalm Co.; Grayling.—G. H. Hicks; Petoskey; Mackinac and northward.

195. GNAPHALIUM, L. Cudweed.

*577. **G. polycephalum,** Michx. Common Everlasting. Th.
Fields. Common.

*578. **G. decurrens,** Ives. Everlasting.
Fields. Abundant in the pine region, and northward.

*579. **G. uliginosum,** L. Low Cudweed. Th.
Roadsides in clayey soil, abundant.

580. **G. purpureum,** L. Purplish Cudweed.
Macomb and St. Clair Co.,—A. F. Fœrste.

196. ADENOCAULON, Hook.

581. **A. bicolor,** Hook. U. P.
Moist ground. Ontonagon River.

197. INULA, L. Elecampane.

*582. **I. Helenium,** L. Elecampane.
Roadsides,—escaped from gardens. Infrequent.

198. POLYMNIA, L. Leaf-Cup.

*583. **P. Canadensis,** L. C. &. S.
Shaded river banks. Ionia Co.; Macomb Co.; Flint; S. Michigan. Infrequent.

584. **P. Uvedalia,** L. S.
S. Michigan,—Wright's Cat.

199. SILPHIUM, L. Rosin-weed.

585. **S. laciniatum,** L. Rosin-weed. Compass-Plant. S.
S. Mich.,—Wright's Cat.

586. **S. terebinthinaceum,** L. Prairie Dock. C. & S.
Oak openings. Ionia; Macomb Co., and southward. Infrequent.

587. **S. integrifolium,** Michx.
S. W.,—University Herb.; Kalamazoo,—Tuthill.

588. **S. perfoliatum,** L. Cup-Plant.
S. Mich.,—Wright's Cat.

200. IVA, L. Marsh Elder. Highwater-shrub.

589. **I. xanthiifolia,** Nutt.
Keweenaw Co.,—F. The farthest station east known.

201. AMBROSIA, Tourn. Ragweed.

*590. **A. trifida,** L. Great Ragweed. Th.
Common. Low grounds along Grand and Maple Rivers; northward to Keweenaw Co.,—F.

*591. var. **integrifolia,** T. & G. Th.

*592. **A. artemisiæfolia,** L. Roman Wormwood. Ragweed. Hog-weed. Bitter-weed. Th.
Roadsides. Introduced from the west. Abundant.

202. XANTHIUM, Tourn. Cocklebur. Clotbur.

*593. **X. Canadense,** Mill.
Common in waste places and along river banks.

594. var. **echinatum,** Gray.
Shores of Great Lakes.

203. HELIOPSIS, Pers. Ox-eye.

595. **H. lævis,** Pers. C. & S.
Banks. Infrequent.

204. ECHINACEA, Moench. Purple Cone-flower.

596. **E. purpurea,** Moench. S. W.
Univ. Herb.,—Harrington; Grand Rapids,—Delia Bailey; St. Joseph,—Dr. Houghton, 1838. Rare.

597. **E. angustifolia,** DC.
Keweenaw Co.,—F.

205. RUDBECKIA, L. Cone-flower.

*598. **R. laciniata,** L. Th.
Low grounds. Frequent.

599. **R. triloba,** L.
Washington, Macomb Co.,—Cooley. Rare.

*600. **R. hirta,** L. Th.
Meadows and low places, apparently introduced. Common.

*601. **R. speciosa,** Wenderoth. C. & S.
Wet soil. Ionia Co.; Flint; Macomb Co.; Ann Arbor. Infrequent.

206. LEPACHYS, Raf.

*602. **L. pinnata,** Torr. & Gray. C. & S.
Dry ground. Ionia Co.; Grand Rapids; S. Mich. Infrequent.

207. HELIANTHUS, L. Sunflower.

603. **H. rigidus,** Desf. S.
Dry soil. Ann Arbor,—Winch. Cat.

604. **H. occidentalis,** Riddell. C. & S.
Sterile soil. Ionia Co.; Flint; Grand Rapids; Macomb Co., etc. Infrequent.

*605. **H. giganteus**, L. Th.

Low grounds; variable. Ionia Co.; Flint; Ann Arbor; Macomb Co., and northward. Common.

*606. **H. divaricatus**, L. Th.

Dry woods. Common.

607. **H. hirsutus**, Raf. S.

Dry soil; Ann Arbor, and S. W.

*608. **H. strumosus**, L. C. & S.

Dry soil. Frequent.

609. **H. trachelilifolius**, Willd. C. & S.

Copses. S. Mich.,—Wright's Cat; Macomb Co.,—Dr. D. Cooley.

*610. **H. decapetalus**, L. L. P.

Low grounds. Frequent.

*611. **H. tuberosus**, L. Jerusalem Artichoke.

Sparingly escaped from gardens.

208. ACTINOMERIS, Nutt.

612. **A. squarrosa**, Nutt. S.

Rich soil. S. Mich.—Wright's Cat.; Dundee,—Wheeler; Islands in the Detroit river,—Maclagan, Can. Cat.

209. COREOPSIS, L. Tickseed.

613. **C. lanceolata**, L. Th.

Sandy shores of Lake Huron; sand hills, Cheboygan Co.,—B. & K.; sandy plains near Baldwin,—Dr. Beal; south to Macomb Co.,—Cooley.

614, var. **angustifolia**, T. & G.

Shore of Little Traverse Bay and Lake Superior.

615. **C. palmata**, Nutt. S.

S. Mich.,—Wright's Cat.; shore of Barron Lake,—Wheeler, 1890; Gull Prairie,—Dr. Houghton, 1838.

616. **C. verticillata**, L.

Samaria, Monroe Co., Grand Rapids,—Wheeler.

617. **C. tripteris**, L. Tall Coreopsis. S.

Detroit; Macomb Co.; Oakland Co.; S. Mich.,—Wright's Cat.; Ionia; Grand Rapids.

*618. **C. trichosperma**, Michx., var. **tenuiloba**, Gray. C. & S.

Swamps. Flint; Montcalm Co.; Ionia Co.; S. Mich.—Wright's Cat. Common in pine country, infrequent elsewhere. Flowers a beautiful golden yellow. Frequently, in September, swamps of large size may be seen so full of this Coreopsis that at a little distance they seem one mass of yellow.

619. **C. aristosa**, Michx. C. & S.

S. Mich.—Univ. Herb.

620. **C. discoidea**, Torr. & Gray.

Wet ground. Ionia Co. Scarce.

210. BIDENS, L. Bur-Marigold.

*621. **B. frondosa**, L. Common Beggar-ticks. Stick-tight. Th.

Low grounds. A troublesome weed. Common.

*622. **B. connata**, Muhl. Swamp Beggar-ticks. Th.

Low grounds. Common.

*623. var. **comosa**, Gray.

Infrequent.

*624. **B. cernua**, L. Smaller Bur-Marigold. Th.

Wet places. Cheboygan Co.,—Kofoid. Southward. Frequent.

*625. **B. chrysanthemoides**, Michx. Larger Bur-Marigold. Th.

Swamps. Common.

*626. **B. Beckii**, Torr. Water Marigold.

S. Mich.—Wright's Cat.; Ann Arbor; Wexford Co.,—Cooley; Manistee,—E. J. Hill; Indian River,—Wheeler. Rare.

211. HELENIUM, L. Sneeze-weed.

*627. **H. autumnale**, L. C. & S.

River banks. Common.

212. ANTHEMIS, L. Chamomile.

*628. **A. Cotula**, DC. May-weed. Dog-Fennel. Th.

Roadsides, etc. Common.

629. **A. arvensis**, L. Corn Chamomile.

Introduced. Three Rivers,—Wheeler; Keweenaw Co.,—F.

213. ACHILLEA, L. Yarrow.

*630. **A. Millefolium**, L. Common Yarrow or Milfoil. Th.

Fields. Common.

631. **A. Ptarmica**, L. Sneezewort.

Mich.,—Gray's Manual. Rare.

214. MATRICARIA, Tourn. Wild Chamomile.

632. **M. inodora**, L.

Flint,—Dr. D. Clark.

215. CHRYSANTHEMUM, Tourn. Ox-eye Daisy.

*633. **C. Leucanthemum**, L. Ox-eye or White Daisy. Th.

Meadows and pastures. A vile weed, becoming frequent in E. & S. parts of the State.

*634. **C. Balsamita**, L., var. **tanacetoides**, Boiss. Mint-Geranium.

Escaped from gardens.

216. TANACETUM, L. Tansy.

*635. **T. vulgare**, L. Common Tansy.

Escaped from gardens. Frequent.

636. **T. Huronense**, Nutt.

Sand dunes at the head of Little Traverse Bay, and northward. Frequent.

217. ARTEMISIA, L. Wormwood.

*637. **A. caudata**, Michx. C. & S.

Sandy fields. Ionia Co.; Montcalm Co.; S. Haven,—Bailey. Infrequent.

638. **A. Canadensis**, Michx. Th.

Sand dunes. Barron Lake; New Buffalo,—Wheeler; Ottawa Co.; Emmet Co.; to Lake Superior.

639. **A. Ludoviciana**, Nutt. Western Mugwort.

Dry banks. Niles,—J. T. Scoville, Univ. Herb.; Keweenaw Co.,—Farwell. Rare.

640. **A. vulgaris**, L. Common Mugwort.

Waste places. Infrequent.

*641. **A. biennis**, Willd.

A road-side weed, lately introduced from the west and extending throughout the State.

642. **A. Absinthium**, L. Common Wormwood.

Ionia Co.; Flint; Gratiot Co. Sparingly escaped from gardens.

218. TUSSILAGO, Tourn. Coltsfoot.

*643. **T. Farfara**, L.

Sault de Ste. Marie,—Whitney's Cat.; Washington, Macomb Co.,—W. A. Brotherton.

219. PETASITES, Tourn. Sweet Coltsfoot.

644. **P. palmata,** Gray.

Harrisville, Oscoda, Alger, and westward; Keweenaw Co.,—F.

220. ARNICA, L.

645. **A. Chamissonis,** Less.

Shores of Lake Superior,—Gray's Man.; Copper Harbor,—Whitney's Catalogue.

221. SENECIO, Tourn. Groundsel.

*646. **S.** vulgaris, L. Common Groundsel.

Flint; Macomb Co.; S. W. Mich.,—Wright's Cat.

*647. **S. aureus,** L. Golden Ragwort. Squaw-weed. Th.

Very variable. Common.

*648. var. **obovatus,** Torr. & Gray.

More common southward.

649. var. **Balsamitæ,** Torr. & Gray. Th.

Abundant northward. Mackinaw City.

222. CACALIA, L. Indian Plantain.

650. **C. suaveolens,** L. Indian Plantain.

Lodi,—Miss Clark, in Winch. Cat. Gray's Manual. Rare.

*651. **C. atriplicifolia,** L. Pale Indian Plantain. C. & S.

Woods. Ionia Co.; S. Mich.,—Wright's Cat. Frequent.

652. **C. tuberosa,** Nutt. Tuberous Indian Plantain. S.

S. Mich.,—Wright's Cat.; 3 miles east of Kalamazoo, 1888,—Dr. D. Houghton; Mottville,—I. N. Mitchell.

223. ERECHTITES, Raf. Fireweed.

*653. **E. hieracifolia,** Raf. Fireweed. Th.

New clearings. Common, northward.

224. ARCTIUM, L. Burdock.

*654. **A.** Lappa, L. Burdock. Th.

Waste places. Common.

655. var. minus, Gray.

Keweenaw Co.,—F.

225. CNICUS, Tourn. Common or Plumed Thistle.

*656. **C.** lanceolatus, Hoffm. Common Thistle. Th.

Roadsides and fields. Common.

657. **C. horridulus,** Pursh. Yellow Thistle.

N. shore Lake Superior,—Agassiz; Grand Detour,—Porter.

658. **C. Pitcheri,** Torr.

Sand dunes. South Haven; and northward to L. Superior; Sand Point, Saginaw Bay. Frequent.

659. **C. undulatus,** Gray. N. & U. P.

"Islands of L. Huron and Michigan,"—Gray; Drummond's I.,—Winch. Cat.

*660. **C. altissimus,** Willd. C. & S.

Ionia Co.; Flint; Macomb Co. Infrequent.

*661. var. **discolor,** Gray. C. & S.

Meadows. Montcalm Co.; Ionia Co.; Flint; and southward. Flowers sometimes white. Infrequent.

*662. **C. muticus,** Pursh. Swamp Thistle. Th.

Swamps. Freqnent.

663. **C. pumilus,** Torr. [**C. Hillii,** W. M. Canby, *Garden & Forest,* March 4, 1891.] Pasture Thistle.

S. W. Mich.,—Wright's Cat.; Grand Rapids,—Coleman's Cat.; Macomb Co.,—Dr. Cooley; Baldwin,—Dr. Beal; sand hills, Cheboygan Co., frequent,—B. & K.

*664. **C.** ARVENSIS, Hoffm. Canada Thistle. Th.

Fields. A vile pest. Infrequent in center of the State, but increasing rapidly, and already troublesome in some localities. Our Canada Thistle law ought to be rigidly enforced.

226. ONOPORDON, Vaill.

665. **O.** ACANTHIUM, L. Cotton or Scotch Thistle.

Grand Rapids. Rare.

227. KRIGIA, Schreber. DWARF DANDELION.

666. **K. Virginica,** Willd.

Barrens. N. part of Clare Co.; Walton. Rare.

*667. **K. amplexicaulis,** Nutt. L. P.

Moist hillsides. Frequent.

228. CICHORIUM, Tourn. SUCCORY OR CHICORY.

*668. **C.** INTYBUS, L. Th.

Ionia Co.; Flint; Detroit, etc.; roadsides. Frequent.

229. TRAGOPOGON, L. GOAT'S-BEARD.

669. **T.** PRATENSIS, L. Goat's-beard.

Spreading. Hubbardston,—Wheeler; Kalamazoo,—Tuthill.

230. LEONTODON, L. HAWKBIT.

670. **L.** AUTUMNALIS, L. Fall Dandelion.

Well established at Hubbardston.

231. HIERACIUM, Tourn. HAWKWEED.

*671. **H. Canadense,** Michx. Th.

Woods. Frequent.

672. **H.** PILOSELLA, L. Mouse-ear Hawkweed.

Introduced at Benzonia,—G. A. Clark.

*673. **H. paniculatum,** L. C. & S.

Macomb Co.; S. Mich.,—Wright Cat. Scarce.

*674. **H. venosum,** L. Rattlesnake-weed. Th.

Dry soil in pine woods, or on oak land. A form has been seen at Ionia not having purple veins in the root leaves; abundant at Point-aux-Pins, at the entrance to Lake Superior,—Macoun, Can. Cat. Frequent.

*675. **H. scabrum,** Michx. Th.

Woods. Common.

*676. **H. Gronovii,** L. Hairy Hawkweed. C. & S.

Dry soil. Ionia Co.; Flint; Macomb Co; S. W. Mich.,—Wright Cat. Infrequent.

677. **H. longipilum,** Torr. Long-bearded Hawkweed. L. P.

Fields. Macomb Co.; Traverse City; S. W.,—Wright Cat.; Grand Rapids,—Coleman. Scarce.

232. CREPIS, L.

*678. **C.** TECTORUM, L.

Introduced.

[H. UMBELLATUM, L.

North shore of Lake Superior,—Gray.]

233. PRENANTHES, Vaill. Rattlesnake-root.

*679. **P. racemosa,** Michx.

Lenawee Co.,—G. F. Comstock; Flint; Macomb Co.; shore of L. Mich., near Sitting Rabbit,—Winch. Cat.; S. W.,—Wright Cat.; Cheboygan Co.,—Beardslee; Keweenaw Co.,—Farwell. Rare.

*680. **P. alba,** L. White Lettuce. Rattlesnake-root. Th.

Woods. Common.

*681. **P. altissima,** L. Th.

Rich woods. Frequent.

234. TARAXACUM, Haller. Dandelion.

*682. **T.** officinale, Weber. Common Dandelion.

Fields everywhere.

235. LACTUCA, Tourn. Lettuce.

*683. **L.** Scariola, L. Prickly Lettuce.

A bad weed, spreading and becoming rapidly introduced everywhere along lines of railroad, etc.

*684. **L. Canadensis,** L. Wild Lettuce. Th.

Rich soil. Frequent.

685. **L. integrifolia,** Bigel.

Petoskey,—Wheeler, 1890.

*686. **L. hirsuta,** Muhl.

Infrequent. Hubbardston; Macomb Co.,—Cooley.

687. **L. pulchella,** DC. N. & U. P.

"Upper Michigan,"—Prof. Porter; Caribou I.; Lake Huron,—Dr. Todd; Keweenaw Co.,—F.

*688. **L. leucophæa,** Gray. Th.

Frequent.

689. var. **integrifolia,** Gray.

Belle Isle, Detroit,—Wheeler.

236. SONCHUS, L. Sow-Thistle.

*690. **S.** oleraceus, L. Common Sow-Thistle.

Waste places. Macomb Co.; Montcalm Co.; northward to L. Superior. Frequent.

*691. **S.** asper, Vill. Spiny-leaved Sow-Thistle. Th.

Waste places. Frequent.

*692. **S.** arvensis, L. Field Sow-Thistle.

Grand Rapids—Coleman's Cat. Rare.

XLIX. LOBELIACEÆ. Lobelia Family.

237. LOBELIA, L.

*693. **L. cardinalis,** L. Cardinal-flower. Th.

River banks. Flowers rarely rose-color or even white. Showy and easily cultivated. Common.

*694. **L. syphilitica,** L. Great Lobelia. L. P.

Low grounds. Flowers vary to white. Common.

*695. **L. spicata,** Lam. Th.

Oak openings. Frequent.

[L. Floridana, Gærtn.

Islands in Detroit river,—Maclagan, Cat. Canadian Plants. Probably occurs within the State.]

696. var. **hirtella**, Gray.

Keweenaw Co.,—F.

*697. **L. Kalmii**, L. Th.

Wet banks, and rocks along shores. Ionia Co.; Ann Arbor; Oakland Co.; Petoskey; to L. Superior Frequent.

698. **L. inflata**, L. Indian Tobacco. Th.

Pastures. Montcalm Co.; Flint; Macomb Co.; Oakland Co.; Put-in-Bay. Scarce.

699. **L. Dortmanna**, L. Water Lobelia. U. P.

Isle Royale,—Dr. A. B. Lyons.

L. CAMPANULACEÆ. CAMPANULA FAMILY.

238. SPECULARIA, Heister. VENUS'S LOOKING-GLASS.

700. **S. perfoliata**, A. DC. C. & S.

Gravelly fields. Clinton Co.; S. E.,—University Herb.; Niles,—I. N. Mitchell; Detroit,—A. B. Lyons. Scarce.

239. CAMPANULA, Tourn. BELLFLOWER.

*701. **C. rotundifolia**, L. Harebell. Th.

Sandy banks and lake shores. Common.

702. var. **arctica**, Lange.

Keweenaw Co.,—F.; shore of Black Lake, Cheboygan Co.,—B. & K.; Petoskey,—Wheeler.

703. var. **velutina**, DC.

Sand hills of Burt Lake,—E. J. Hill.

*704. **C. aparinoides**, Pursh. Marsh Bellflower. Th.

Wet grassy grounds. Common.

*705. **C. Americana**, L. Tall Bellflower. C. & S.

Moist woodlands. Ionia Co.; Flint; Macomb Co.; Ann Arbor,—Winch. Cat. Frequent.

LI. ERICACEÆ. HEATH FAMILY.

240. GAYLUSSACIA, HBK. HUCKLEBERRY.

*706. **G. resinosa**, Torr. & Gray. Black Huckleberry. Th.

Hillsides. Frequent.

241. VACCINIUM, L. BLUEBERRY. BILLBERRY. CRANBERRY.

*707. **V. Pennsylvanicum**, Lam. Dwarf Blueberry. Th.

Dry hills and barrens. "The lowest and earliest-fruited of the blueberries,"—Gray, Synopt. Flora of N. Am. Very variable in color of fruit, etc. Common.

*708. **V. Canadense**, Kalm. Th.

Swamps. Commonest sp. in Cheboygan Co.,—B. & K. This species furnishes large quantities of berries for market in the northern lake region. Common.

709. **V. vacillans**, Solander. Low Blueberry. Th.

Barrens. Infrequent.

*710. **V. corymbosum**, L. Swamp-Blueberry. Th.

Swamps. Yielding abundantly; variable. Common.

711 var. **amœnum**, Gray.

Keweenaw Co.,—F.

712. **V. uliginosum**, L. Bog Bilberry. U. P.

"Shore of Lake Superior,"—Gray; Isle Royale and White Fish Pt., L. Superior,—Henry Gillman.

713. **V. cæspitosum,** Michx., var. **cuneifolium,** Nutt. U. P.
Shores of Lake Superior and westward,—Gray, Fl. N. A.; Lyons.

714. **V. myrtilloides,** Hook. U. P.
Damp woods L. Superior,—Gray, Fl. N. A.; Keweenaw Co.,—F.

715. **V. ovalifolium,** Smith. U. P.
Woods L. Superior, S. shore,—Robbins.

*716. **V. Oxycoccus,** L. Small Cranberry. Th.
Sphagnous swamps. Ann Arbor; Ionia Co.; Constantine,—Wheeler, and northward. Infrequent.

*717. **V. macrocarpon,** Ait. Large or American Cranberry. Th.
Bogs. The common Cranberry of the market. Common.

242. CHIOGENES, Salisb. Creeping Snowberry.

718. **C. serpyllifolia,** Salisb. Creeping Snowberry. Th.
S. Mich.,—Wright's Cat.; Ionia Co.; Montcalm Co.; Petoskey, etc. Sphagnous swamps. Infrequent.

243. ARCTOSTAPHYLOS, Adans. Bearberry.

719. **A. Uva-ursi,** Spreng. Bearberry. Th.
Sandy soil. Abundant northward, but rare S. of lat. 43°.

244. EPIGÆA, L. Trailing Arbutus. Ground Laurel.

720. **E. repens,** L. Th.
Borders of marshes, and woods in sandy soil. Jackson,—W. C. Hull; Niles,—I. N. Mitchell. Rare S., frequent in C., and common northward.

245. GAULTHERIA, Kalm. Aromatic Wintergreen.

*721. **G. procumbens,** L. Creeping Wintergreen. Th.
Low woods, and borders of swamps. Common.

246. ANDROMEDA, L.

*722. **A. polifolia,** L. Th.
Sphagnous swamps, S. Mich.,—Wright's Cat.; Ionia Co. and northward. Frequent.

723. **A. ligustrina,** Muhl.
Keweenaw Pt.,—Dr. Robbins.

247. CASSANDRA, Don. Leather-Leaf.

*724. **C. calyculata,** Don. Th.
Swamps. Common.

248. KALMIA, L. American Laurel.

725. **K. angustifolia,** L. Sheep Laurel. Lambkill. Wicky.
Harrisville, west to Portage Lake; Tawas City and Thunder Bay, common,—Winch. Cat.

726. **K. glauca,** Ait. Pale Laurel. Th.
Bogs. S. Mich.,—Wright's Cat.; Ionia Co.; Macomb Co.; Long Lake, Cheboygan Co., rare,—B. & K. northward. Infrequent.

727. var. **rosmarinifolia,** Pursh.
Keweenaw Co.,—F.

249. LEDUM, L. Labrador Tea.

*728. **L. latifolium,** Ait.
Swamps and bogs. Common northward.

[V. Vitis-Idæa, L. Cowberry. Mountain Cranberry.
N. shore L. Superior,—Dr. A. B. Lyons; and probably in our district.]

250. CHIMAPHILA, Pursh. PIPSISSEWA.

*729. **C. umbellata,** Nutt. Pipsissewa. Prince's Pine. Th.

Pine woods. Common.

730. **C. maculata,** Pursh. Spotted Wintergreen. C. & S.

Oak woods. Ionia; Bangor and South Haven, Van Buren Co.; Flint. Rare or local.

251. MONESES, Salisb. ONE-FLOWERED PYROLA.

731. **M. grandiflora,** Salisb. Th.

Pine forests. Flowers very fragrant when a little wilted. Montcalm Co.; Flint; Indian River,—Wheeler; Clarkston,—G. H. Hicks; Fort Gratiot,—Winch. Cat.; Cedar swamps, Cheboygan Co.,—B. & K.; Keweenaw Co.,—F.; Escanaba,—E. J. Hill. Rare.

252. PYROLA, Tourn. SHIN-LEAF. WINTERGREEN.

732. **P. minor,** L. U. P.

"Cold woods, L. Superior."—Gray.

*733. **P. secunda,** L. Th.

Rich woods. Common.

734. var. **pumila,** Gray.

Grayling,—G.H. Hicks; Oscoda; Cheboygan Co.,—B. & K.; Escanaba,—E. J. Hill; Keweenaw Co.,—F.

735. **chlorantha,** Swartz. C. N. & U. P.

Pine woods. Rare south of lat. 43°. Frequent northward.

*736. **P. elliptica,** Nutt. Shin-leaf. Th.

Rich woods. Ann Arbor; Ionia Co.; northward to L. Superior. Common.

*737. **P. rotundifolia,** L. Th.

Dry oak woods. Common.

738. var. **asarifolia,** Hook.

The Cove, L. Huron,—Winch. Cat.

739. var. **uliginosa,** Gray.

L. Superior,—Prof. J. Macoun; Quinnesec,—E. J. Hill; Keweenaw Co.,—F.; Cheboygan Co.,—Beardslee.

253. PTEROSPORA, Nutt. PINE-DROPS.

740. **P. Andromedea,** Nutt.

Sitting Rabbit,—Winch. Cat.; Carp river, U. P.,—Whitney Cat; Keweenaw Co.,—F.

254. MONOTROPA, L. INDIAN PIPE.

*741. **M. uniflora,** L. Indian Pipe. Corpse-Plant. Th.

Damp woods. Frequent.

*742. **M. Hypopitys,** L. Pine-sap. False Beech-drops.

Oak and pine woods. Macomb Co.; Ft. Gratiot,—Austin; to Ontonagon River, L. Superior,—Whitney Cat.; Cheboygan Co., cedar swamp and hard woods, rare,—B. & K.; Grayling,—Hicks; Escanaba,—E. J. Hill. Infrequent.

LII. PRIMULACEÆ. PRIMROSE FAMILY.

255. DODECATHEON, L. AMERICAN COWSLIP.

743. **D. Meadia,** L. Shooting-Star. S.

Moist, shaded grounds,—Gray, Flora of N. A.; Dr. A. B. Lyons.

256. PRIMULA, L. PRIMROSE. COWSLIP.

744. **P. farinosa,** L. Bird's-eye Primrose. N. & U. P.

Pictured Rocks,—Hicks; shores of Little Traverse Bay; Drummond's Island,—Winch. Cat.; L. Superior,—Whitney Cat.; Keweenaw Co.,—F.

*745. **P. Mistassinica**, Michx.

S. E.—University Herb; Lake Superior,—Whitney Cat.; Rocks, Grand Ledge, 1890; Presque Isle.,—Dr. Houghton; Eagle River,—F. E. Wood. Rare.

257. TRIENTALIS, L. Chickweed-Wintergreen.

*746. **T. Americana**, Pursh. Star-flower. Th.

Damp woods. Common.

258. STEIRONEMA, Raf.

*747. **S. ciliatum**, Raf. Th.

Swamps. Common.

748. **S. lanceolatum**, Gray.

Howard City,—Dr. Beal.

749. var. **hybridum**, Gray.

Low grounds. Cheboygan Co.,—B. & K.

*750. **S. longifolium**, Gray. L. P.

Banks of streams. Ann Arbor and Ft. Gratiot,—Winch. Cat.; Ionia Co.; Flint, etc. Frequent.

259 LYSIMACHIA, Tourn. Loosestrife.

751. **L. quadrifolia**, L. L. P.

Sandy soil. Ann Arbor,—Winch. Cat.; Ionia Co.; Montcalm Co.; Flint; Macomb Co., northward to Oscoda Co.

*752. **L. stricta**, Ait. Th.

Borders of marshes. A form of this species was found in a sphagnous swamp near Hubbardston, bearing bulblets in the axils instead of flowers. Frequent.

753. var. **producta**, Gray.

In herb. Gray from Mich.,—L. H. Bailey.

754. **L. Nummularia**, L. Moneywort.

Escaped from cultivation. Monroe Co.,—Wheeler, 1890.

*755. **L. thyrsiflora**, L. Tufted Loosestrife. Th.

Swampy soil. Common.

260. ANAGALLIS, Tourn. Pimpernel.

756. **A. arvensis**, L. Common Pimpernel.

Ann Arbor—Mary H. Clark.

261. SAMOLUS, Tourn. Water Pimpernel. Brook-weed.

*757. **S. Valerandi**, L., var. **Americanus**, Gray.

Springy places. Common along Maple river; Flint; Macomb Co.; N. W.,—University Herb.

LIII. OLEACEÆ. Olive Family.

262. FRAXINUS, Tourn. Ash.

*758. **F. Americana**, L. White Ash. Th.

Common.

*759. **F. pubescens**, Lam. Red Ash. Th.

Low grounds. A small tree, seldom noticed. Ionia Co.; S. Mich.,—Wright Cat.; Drummond's I.,—Winch. Cat.; along Black river, Cheboygan Co.,—B. & K.; Keweenaw Co.,—F. Scarce.

*760. **F. viridis**, Michx. f. Green Ash.

Ann Arbor.—Winch. Cat.; and northward. Rare.

*761. **F. quadrangulata**, Michx. Blue Ash. Th.

Rich woods. Infrequent.

*762. **F. sambucifolia,** Lam. Black Ash. Th.

Common.

LIV. APOCYNACEÆ. Dogbane Family.

263. APOCYNUM, Tourn. Dogbane. Indian Hemp.

*763. **A. androsæmifolium,** L. Spreading Dogbane. Th.

Borders of woods. Common.

*764. **A. cannabinum,** L. Indian Hemp. Th.

Low grounds. Exceedingly variable in size, habit, shape of leaves, pubescence, etc. De Candolle's varieties *glaberrimum* and *pubescens* occur, but also intermediate forms, rendering useless any sub-specific names. Common.

LV. ASCLEPIADACEÆ. Milkweed Family.

264. ASCLEPIAS, L. Milkweed. Silkweed.

*765. **A. tuberosa,** L. Butterfly-weed. Pleurisy-root.

Sandy soil. Ranges from Canada to Florida, and from the Saskatchewan Valley to Texas. Common.

766. **A. purpurascens,** L. Purple Milkweed. C. & S.

Woods. Ann Arbor,—Winch. Cat.; Ionia Co.; Clinton Co.; Flint; Macomb Co. Infrequent.

*767. **A. incarnata,** L. Swamp Milkweed. Th.

Banks of streams. Common.

*768. **A. Cornuti,** Decaisne. Common Milkweed or Silkweed. Th.

Fields. Common.

769. **A. obtusifolia,** Michx.

Baldwin, Lake Co.,—Dr. Beal; Sturgis, Barron Lake,—C. F. Wheeler, 1890; Niles,—O. J. Stilwell. Rare.

*770. **A. phytolaccoides,** Pursh. Poke-Milkweed. C. & S.

Moist grounds. Ann Arbor; Ft. Gratiot,—Winch. Cat.; Ionia Co.; Flint; Macomb Co. Infrequent.

771. **A. verticillata,** L.

Barrens, S. Mich.,—Wright Cat.; Monroe Co., Grand Rapids,—Wheeler; Washington, Macomb Co.,—Dr. D. Cooley.

265. ACERATES, Ell. Green Milkweed.

772. **A. longifolia,** Elliott.

South Haven,—Bailey.

773. **A. viridiflora,** Ell. C. & S.

Grand Rapids,—Geo. D. Sones; Ft. Gratiot,—Winch. Cat.; S. W.,—Wright Cat. Rare.

266. VINCETOXICUM, Moench.

*774. **V.** nigrum, Moench.

Escaped from cultivation on College grounds.

[LVI. GENTIANACEÆ. Gentian Family.

267. ERYTHRÆA, Richard. Centaury.

*775. **E.** Centaurium, Pers. Centaury.

Agricultural College grounds,—Bailey. The only locality known in the State.

[A. viridiflora, Ell. var. lanceolata, Gray.

On a sand beach at Point Edward, foot of Lake Huron,—Macoun.]

268. SABBATIA, Adans.

776. **S. angularis,** Pursh. S.

Marshes, Cass Co.,—Univ. Herb., Houghton Survey, Coll., 1838; Goguac Lake, near Battle Creek, 1879, —Prof. V. M. Spalding; S. Mich.,—Wright's Cat.; Berrien Co.,—E. F. Smith. Rare.

269. GENTIANA, Tourn. GENTIAN.

*777. **G. crinita,** Froel. Fringed Gentian. Th.

Low grounds, Lenawee Co.,—G. F. Comstock; Ann Arbor,—Winch. Cat.; South Haven,—Bailey; Mackinac,—Whitney; Ionia Co., etc. Frequent.

*778. **G. serrata,** Gunner. Smaller Fringed Gentian. Th.

Tamarack swamps. Frequent.

*779. **G. quinqueflora,** Lam. C. & S.

Moist hillsides. Ann Arbor,—Winch. Cat.; Ionia Co. Occasional.

780. var. **occidentalis,** Gray.

Lenawee Co.,—G. F. Comstock; Ann Arbor,—Winch. Cat.; Hubbardston; Macomb Co. Infrequent.

781. **G. puberula,** Michx. S.

Barrens. Ann Arbor,—Miss Clark, Miss Allmendinger. Rare.

782. **G. Saponaria,** L. Soapwort Gentian. S.

Moist woods. Macomb Co.; S. Mich.,—Wright Cat. Infrequent.

*783. **G. Andrewsii,** Griesb. Closed Gentian. Th.

River banks. Frequent.

784. **G. alba,** Muhl. Th.

Low meadows and borders of woods. Ionia Co.; Clinton Co.; Ann Arbor and S. W.,—Winch. Cat.; to L. Superior. Rare or local.

785. **G. linearis,** Froel. var. **lanceolata,** Gray. N. & U. P.

Pt. au Chene, L. Mich.,—Winch. Cat.; low ground near Black Lake, Cheboygan Co.,—B. & K.; "Minnesota and along L. Superior,"—Gray.

786. var. **latifolia,** Gray.

Keweenaw Co.,—Farwell.

270. FRASERA, Walt. AMERICAN COLUMBO.

787. **F. Carolinensis,** Walt. C. & S.

Jackson Co. and westward,—Winch. Cat.; Ann Arbor,—Miss Clark; Constantine, Three Rivers,—C. F. Wheeler; Lenawee Co.,—G. F. Comstock; Grand Rapids; Macomb Co. Scarce.

271. HALENIA, Borkh. SPURRED GENTIAN.

788. **H. deflexa,** Griesb. N. & U. P.

Shore of Little Traverse Bay, near Harbor Point; Drummond's Is. and St. Helen's Is.,—Winch. Cat.; northward to Lake Superior; shore Black Lake, Cheboygan Co. Frequent. A form of this species occurs in Keweenaw Co., with the corolla changed into five unequal green and spurless petals,—O. A. Farwell.

272. BARTONIA, Muhl.

*789. **B. tenella,** Muhl.

Open woods. S. Mich.,—Wright Cat., Hubbardston; Flint; Grayling. Rare.

273. MENYANTHES, Tourn. BUCKBEAN.

*790. **M. trifoliata,** L. Th.

Bogs. Common.

274. LIMNANTHEMUM, Gmelin. FLOATING HEART.

791. **L. lacunosum,** Griseb.

Keweenaw Pt.—Dr. Robbins.

LVII. POLEMONIACEÆ. Phlox Family.

275. PHLOX, L.

792. **P. paniculata, L.**
Keweenaw Co.,—Farwell. Introduced.(?)

793. **P. pilosa, L.**
Dry, sandy fields, Ann Arbor,—Winch. Cat.; Ionia Co.; Flint; Macomb Co., etc. Infrequent.

*794. **P. divaricata, L.** L. P.
Woods and fields, northward to Kingsley and Frankfort. Common.

795. **P. bifida, Beck.** S. W.
Rare, Shores of Barron Lake; Klinger Lake, the farthest station east known for this interesting plant,—C. F. Wheeler.

796. **P. subulata, L.** Ground or Moss Pink.
S. Mich..—Winch. Cat.; shore of Barron Lake,—C. F. Wheeler. Common in cultivation.

LVIII. HYDROPHYLLACEÆ. Waterleaf Family.

276. HYDROPHYLLUM, Tourn. Waterleaf.

*797. **H. Virginicum, L.** C. & S.
Rich woods. Frequent.

*798. **H. Canadense, L.** C. & S.
Damp, rich woods. Frequent.

*799. **H. appendiculatum,** Michx. L. P.
Moist hillsides and rich woods, northward to Frankfort. Frequent.

277. PHACELIA, Juss.

800. **P. Franklinii,** Gray. U. P.
"Shores of L. Superior, especially on Isle Royale,"—Gray, and Dr. A. B. Lyons.

LIX. BORRAGINACEÆ. Borage Family.

278. CYNOGLOSSUM, Tourn. Hound's-Tongue.

*801. **C.** officinale, L. Common Hound's-Tongue. Th.
Roadsides. Frequent.

*802. **C. Virginicum, L.** Wild Comfrey. Th.
Open woods,—Comins, Oscoda Co.; Escanaba, where it replaces *C. officinale* as a weed,—E. J. Hill. Frequent.

279. ECHINOSPERMUM, Lehm. Stickseed.

*803. **E. Virginicum,** Lehm. Beggar's Lice. Th.
Woods. Frequent.

804. **E. deflexum,** Lehm., var. **Americanum,** Gray.
Cheboygan Co.,—B. & K.

*805. **E.** Lappula, Lehm. Th.
A worthless weed along roadsides and in waste places.

280. MERTENSIA, Roth. Lungwort.

806. **M. Virginica,** DC. Virginian Cowslip. Lungwort. Blue Bells.
Near Adrian,—Mrs. I. H. Wheeler; S. E. of Grand Rapids,—G. D. Sones. Rare.

807. **M. paniculata,** Don. U. P.
Whitney Cat.; Gray, Fl. N. A.; Keweenaw Co.,—F.

281. MYOSOTIS, Dill. Scorpion-grass. Forget-me-not.

*808. **M. verna**, Nutt. S.

Winch. Cat.; Coleman Cat.; Flint,—Dr. Clark; Ann Arbor,—I. N. Mitchell; shore of Park Lake, Clinton Co.,—C. F. Wheeler. Rare.

282. LITHOSPERMUM, Tourn. Gromwell. Puccoon.

*809. **L.** arvense, L. Wheat-Thief. Red-root. Corn Gromwell. C. & S.

In wheat fields. Introduced from the old world.

*810. **L.** officinale, L. Common Gromwell. Th.

Roadsides. Infrequent.

*811. **L. latifolium**, Michx. C. & S.

Borders of woods S. Mich.,—Winch. Cat.; Ionia Co.; Flint, etc.; Bois Blanc and other islands in Detroit river,—Maclagan, Canadian Catalogue. Frequent.

*812. **L. hirtum**, Lehm. Th.

Light sand. Flowers bright yellow, showy. Frequent.

*813. **L. canescens**, Lehm. Puccoon of the Indians. Th.

Sandy fields, Ann Arbor,—Winch. Cat.; Ionia Co.; Macomb Co. and northward.

814. **L. angustifolium**, Michx.

Dr. A.B. Lyons; "Mich.,"—Gray's Manual, 6th edition.

283. ONOSMODIUM, Michx. False Gromwell.

815. **O. Carolinianum**, DC., var. **molle**, Gray.

Only noticed by Dr. D. Cooley. Macomb Co.

284. SYMPHYTUM, Tourn. Comfrey.

*816. **S.** officinale, L. Common Comfrey.

Escaped from gardens. Infrequent.

285. ECHIUM, Tourn. Viper's Bugloss.

817. **E.** vulgare, L. Blue-weed.

Vulcan,—E. J. Hill.

LX. CONVOLVULACEÆ. Convolvulus Family.

286. IPOMŒA, L. Morning Glory.

818. **I. pandurata**, Meyer. Wild Potato-vine. Man-of-the-Earth. S.

Ann Arbor,—Winch. Cat.; Niles,—I. N. Mitchell; Coleman Cat. Infrequent.

287. CONVOLVULUS, Tourn. Bindweed.

819. **C. spithamæus**, L. Th.

Sandy fields. Local.

*820. **C. sepium**, L. Hedge Bindweed. Th.

Low grounds. Common.

*821. var. **Americanus**, Sims.

Common, with the species.

*822. var. **repens**, Gray.

Frequent.

*823. **C.** arvensis, L. Bindweed.

Alma,—C. A. Davis; Hubbardston; College grounds, along C. & G. T. R. R. Spreading.

288. CUSCUTA, Tourn. Dodder.

824. **C. chlorocarpa**, Engelmann. S. W.

S. Haven,—Mrs. Millington.

*825. **C. tenuiflora**, Engelm.

Maple River valley; Coleman Cat; on willows along Cedar river east of the College.

826. **C. Epithymum**, Murr.

Introduced at Salem, with alfalfa seed.

*827. **C. Gronovii**, Willd. C. & S.

Low grounds. Frequent.

LXI. SOLANACEÆ. Nightshade Family.

289. SOLANUM, Tourn. Nightshade.

*828. **S. Dulcamara**, L. Bittersweet. C. & S.

Roadsides. A form with white flowers and very pubescent stems and leaves, is found near Hubbardston. Infrequent.

*829. **S. nigrum** L. Common Nightshade. C. & S.

Moist, cultivated fields. Common.

290. PHYSALIS, L. Ground Cherry.

830. **P. grandiflora**, Hook. N. & U. P.

"Clearings." First collected in L. P., near Farwell, in June, 1876, where it seemed to be at home. Near the mouth of the AuSable river, Iosco Co., June, '78,—C. B. Cochran; "S. shore of L. Superior,"—Gray, Synop. Fl. N. A.; Escanaba,—E. J. Hill; Indian River,—C. F. Wheeler.

*831. **P. Virginiana**, Mill. Th.

Light, sandy soil. Common.

832. var. **ambigua**, Gray. U. P.

Keweenaw Co.—F.

*833. **P. lanceolata**, Michx. Th.

Sandy soil. Ionia Co., etc. Frequent.

291. NICANDRA, Adans. Apple of Peru.

*834. **N. physaloides**, Gaertn.

Gardens. Ann Arbor,—Winch. Cat.; Flint; Ionia Co. Scarce.

292. LYCIUM, L. Matrimony-Vine.

*835. **L. vulgare**, Dunal.

Escaped from gardens in places.

293. HYOSCYAMUS, Tourn. Henbane.

836. **H. niger**, L. Black Henbane.

Macomb Co.; Ft. Gratiot; Mackinac, abundant,—Winch. Cat.

294. DATURA, L. Jamestown-Weed. Thorn-Apple.

*837. **D. Stramonium**, L. Common Stramonium, or Thorn-Apple. C. & S.

Roadsides. Frequent.

*838. **D. Tatula**, L. Purple Thorn-Apple. C. & S.

Flint; Macomb Co. Rare.

295. NICOTIANA, Tourn. Tobacco.

839. **N. rustica**, L. Wild Tobacco.

Emmet Co., cultivated by the Indians,—Winch. Cat.

LXII. SCROPHULARIACEÆ. FIGWORT FAMILY.

296. VERBASCUM, L. MULLEIN.

*340. **V. THAPSUS, L.** Common Mullein. Th.

Fields and road sides everywhere,—a common weed. Cultivated in England under the name of Aaron's Rod.

*841. **V. BLATTARIA, L.** Moth Mullein.

Road sides. S. Mich.; Ionia Co.; Detroit, etc.

297. LINARIA, Tourn. TOAD-FLAX.

*842. **L. Canadensis,** Dumont.

S. shore of Saginaw Bay,—Winch. Cat.; barrens, in Clare Co. Infrequent or wanting in C. and S. Mich. Grand Rapids,—G. D. Sones.

*843. **L. VULGARIS, Mill.** Ramsted. Butter and Eggs.

Road sides. Spreading from cultivation.

298. SCROPHULARIA, Tourn. FIGWORT.

*844. **S. nodosa, L., var. Marilandica,** Gray. Th.

Rich soil. Keweenaw Co.,—F., and southward. Frequent.

299. COLLINSIA, Nutt.

*845. **C. verna,** Nutt. C. & S.

A beautiful little annual with blue and white flowers. Moist woods. Ann Arbor,—Winch. Cat.; S. W., —Wright's Cat.; Ionia Co., and probably reaches its N. limits in Gratiot Co.

846. **C. parviflora,** Dougl. U. P.

"Shady, moist ground, Upper Michigan,"—Gray Fl. N. A; Keweenaw Co.,—F.

300. CHELONE, Tourn. SNAKE-HEAD. TURTLE-HEAD.

*847. **C. glabra, L.** Th.

Borders of streams. Frequent.

301. PENTSTEMON, Mitchell. BEARD-TONGUE.

*848. **P. pubescens,** Solander. Th.

Dry soil. Ann Arbor,—Winch. Cat.; to Mackinac,—G. H. Hicks. Common.

849. **P. lævigatus,** Solander, var. **Digitalis,** Gray.

Near Adrian,—Mrs. I. H. Wheeler.

302. MIMULUS, L. MONKEY-FLOWER.

*850. **M. ringens, L.** Th.

Wet places. Common.

851. **M. alatus,** Ait. S. W.

Wright's Cat.

852. **M. moschatus,** Dougl.

Keweenaw Co.,—F.

853. **M. Jamesii,** Torr. Th.

Abundant at Mackinac.—Winch. Cat.; "Upper Michigan,"—Gray; Petoskey; Hubbardston,—Wheeler; Grayling.—G. H. Hicks; Comstock, Kalamazoo Co.,—Tuthill; rare southward; near Miller's, Ind., Flora of Cook Co., Illinois.

303. LIMOSELLA, L. MUDWORT.

854. **L. aquatica, L., var. tenuifolia,** Hoffmann.

Dr. A. B. Lyons.

304. GRATIOLA, L. Hedge-Hyssop.

855. **G. Virginiana, L.**
S. Mich.,—Winch. Cat.; Keweenaw Pt.,—Dr. Robbins. Rare.

305. ILYSANTHES, Raf.

*856. **I. riparia, Raf.** False Pimpernel. C. & S.
Low grounds. Frequent.

306. SYNTHYRIS, Benth.

857. **S. Houghtoniana, Benth.**
Oak barrens. S. Mich.,—Wright's Cat.; Ionia Co., three miles S. of Saranac, probably reaches here its N. limits; Barry Co.,—L. H. Bailey. Rare.

307. VERONICA, L. Speedwell.

*858. **V. Virginica, L.** Culver's-root. Culver's Physic. Th.
Open woods. Common.

*859. **V. Anagallis, L.** Water Speedwell. Th.
In springs and brooks. Frequent.

*860. **V. Americana,** Schweinitz. American Brooklime. Th.
Brooks. Common.

*861. **V. scutellata, L.** Marsh Speedwell. Th.
Swamps. Frequent.

862. **V. officinalis, L.** Common Speedwell. S.
Dry hills. Ann Arbor,—Winch. Cat. Scarce.

*863. **V. Chamædrys, L.**
Escaped from cultivation.

*864. **V. serpyllifolia, L.** Thyme-leaved Speedwell. Th.
Open grounds. Frequent.

*865. **V. peregrina, L.** Neckweed. Purslane Speedwell. Th.
Moist grounds everywhere. Common.

*866. **V. arvensis, L.** Corn Speedwell. C. & S.
Cultivated and waste grounds. Common.

867. **V. agrestis, L.** Field Speedwell.
Sandy fields. Coleman Cat.; and Flint. Rare.

868. **V. Buxbaumii,** Tenore.
Waste grounds,—Coleman Cat. Corunna,—G. H. Hicks; Port Huron,—Dodge.

308. BUCHNERA, L. Blue-Hearts.

869. **B. Americana, L.** C. & S.
Moist sandy ground. S. W. Wright Cat.; Flint; Macomb Co.,—Coleman Cat. Infrequent.

309. GERARDIA, L.

*870. **G. pedicularia, L.** L. P.
Woods. Frequent.

*871. **G. flava, L.** Downy False Foxglove. C. & S.
Open woods. Frequent.

*872. **G. quercifolia,** Pursh. Smooth False Foxglove. C. & S.
Oak woods. Frequent.

873. **G. lævigata,** Raf. S.
Coleman Cat.; Flint; Dr. Lyons.

874. **G. auriculata,** Michx. S.
Wright Cat. Rare.

875. **G. aspera,** Dougl.
"Plains and prairies, Mich., etc.,"—Gray's Manual.

876. **G. purpurea,** L. Purple Gerardia. L. P.
Moist, sandy ground, near the Great Lakes; Port Huron,—C. K. Dodge.

*877. var. **paupercula,** Gray.
Oakland Co.; shore of Park Lake, Clinton Co.,—Wheeler.

878. **G. tenuifolia,** Vahl. Slender Gerardia.
Ann Arbor,—Winch. Cat.; Macomb Co. Rare.

*879. var. **asperula,** Gray.
Lenawee Co.,—G. F. Comstock; Flint,—Dr. Clark.

310. CASTILLEIA, Mutis. Painted-Cup.

*880. **C. coccinea,** Spreng. Scarlet Painted-Cup. Th.
Wet and dry grounds. Varies in color of bracts from scarlet to yellow. Common.

881. **C. pallida,** Kunth, var. **septentrionalis,** Gray. U. P.
Lake Superior,—Gray; Keweenaw Co.,—F.

311. EUPHRASIA, Tourn. Eyebright.

882. **E. officinalis,** L., var. **Tartarica,** Benth. U. P.
"Shore of Lake Superior,"—Gray; Isle Royale,—Whitney Cat.

312. RHINANTHUS, Yellow-Rattle.

883. **R. Crista-galli,** L. U. P.
"Lake Superior,"—Gray, Fl. N. Am.

313. PEDICULARIS, Tourn. Lousewort.

*884 **P. Canadensis,** L. Common Lousewort. Wood Betony. Th.
Moist banks and woodlands. Common.

*885. **P. lanceolata,** Michx. Th.
Swamps. Frequent.

314. MELAMPYRUM, Tourn. Cow-Wheat.

*886. **M. Americanum,** Michx. Th.
Sandy woods. A form with broad, spear-shaped leaves is frequent. Common.

LXIII. OROBANCHACEÆ. Broom-rape Family.

315. EPIPHEGUS, Nutt. Beech-drops. Cancer-root.

*887. **E. Virginiana,** Bart.
Beech woods, Ionia Co.; Flint; Macomb Co., etc. Very common in Grand-Saginaw Valley.

316. CONOPHOLIS, Wallr. Squaw-root. Cancer-root.

888. **C. Americana,** Wallr.
Moist woods, Ann Arbor; S. Mich,—Wright Cat.; Ionia Co.; Flint; Macomb Co., northward to Keweenaw Co.,—F. Infrequent.

317. APHYLLON, Mitchell. Naked Broom-rape.

889. **A. uniflorum,** Gray. One-flowered Cancer-root. Th.
Damp woodlands, S. Mich.,—Wright Cat.; Ann Arbor,—G. D. Sones; Flint; Grayling,—G. H. Hicks; Lake Superior,—Whit. Cat. Infrequent.

890. **A. fasciculatum,** Gray.
"Sandy ground, Lake Michigan,"—Gray; sand dunes, Frankfort.

LXIV. LENTIBULARIACEÆ. BLADDERWORT FAMILY.

318. UTRICULARIA, L. BLADDERWORT.

*891. **U. vulgaris**, L. Greater Bladderwort. Th.

Slow streams. Throat of corolla orange, veined with brown-purple. Frequent.

892. **U. minor**, L. Smaller Bladderwort. Th.

Shallow water. Detroit river,—D. H. Campbell; Ann Arbor,—Winch. Cat.; Hillsdale,—University Herb.; Hubbardston; Montcalm Co.: northward. Rare.

*893. **U. gibba**, L. L. P.

Old Mission, Grand Traverse Co.,—E. J. Hill; shore of Park Lake, Clinton Co.,—C. F. Wheeler; Lenawee Co.,—G. F. Comstock. Rare.

894. **U. intermedia**, Hayne. Th.

Shallow water. Ann Arbor,—Winch. Cat.; Macomb Co.; Grand Rapids,—Sones; northward to Black Lake. Cheboygan Co.,—B. & K.; and Keweenaw Co.,—F. Infrequent.

*895. **U. resupinata**, B. D. Greene.

Very abundant on the east shore of Woodward lake, in Ionia Co.,—E. F. Smith, 1880; shore of Pine lake, Ingham Co., also reported from Whitings, Ind.

*896. **U. cornuta**, Michx. Th.

Shore of Pine Lake, Ingham Co.; Point Sable, Mason Co.,—C. E. St. John; Petoskey; Cheboygan Co.,—B. & K.; Keweenaw Co.,—F.

319. PINGUICULA, Tourn. BUTTERWORT.

897. **P. vulgaris**, L. U. P.

Wet rocks. Whitney's Catalogue; Isle Royale,—Dr. A. B. Lyons; Pictured Rocks, abundant,—G. H. Hicks.

LXV. ACANTHACEÆ. ACANTHUS FAMILY.

320. RUELLIA, Plumier.

898. **R. ciliosa**, Pursh. S.

Dry grounds. Wright Cat.

899. **R. strepens**, L. S.

Dry soil. Wright Cat.

321. DIANTHERA, Gronov. WATER-WILLOW.

900. **D. Americana**, L. S.

In shallow water. Ann Arbor,—Winch. Cat.; Put-in-Bay; S. Haven,—Bailey.

LXVI. VERBENACEÆ. VERVAIN FAMILY.

322. VERBENA, Tourn. VERVAIN.

*901. **V. urticæfolia**, L. White Vervain. Th.

Waste places. Common.

902. **V. angustifolia**, Michx. S.

Dry grounds. Winch. Cat.

*903. **V. hastata**, L. Blue Vervain. Th.

Roadsides. Common.

904. **V. bracteosa**, Michx. S.

Waste places. Coleman Cat.; Kalamazoo,—Bailey.

323. LIPPIA, Houst.

905. **L. lanceolata,** Michx. Fog-fruit. S. W.

Coleman Cat.; Niles,—I. N. Mitchell.

324. PHRYMA, L. Lopseed.

*906. **P. Leptostachya,** L. C. & S.

Moist woods, Pt. au Chene,—Winch. Cat.; Flint; Macomb Co.; S. Mich.,—Wright Cat.; Ionia Co. Infrequent.

LXVII. LABIATÆ. Mint Family.

325. TEUCRIUM, Tourn. Germander.

*907. **T. Canadense,** L. American Germander. Wood Sage. L. P.

Low grounds. Infrequent at Black Lake, Cheboygan Co.,—B. & K.

326. COLLINSONIA, L. Horse-Balm.

*908. **C. Canadensis,** L. Stone-root. Rich-weed. C. & S.

Rich woods. Ionia Co.; Flint; Detroit; Ann Arbor, and S. W.,—Winch. Cat. Frequent.

327. MENTHA, Tourn. Mint.

*909. **M.** viridis, L. Spearmint.

Roadsides. Escaped from cultivation. Frequent.

*910. **M.** piperita, L. Peppermint. Th.

Along streams. Extensively cultivated in St. Joseph and Wayne counties for the oil. Common.

*911. **M. Canadensis,** L. Wild Mint. Th.

Low grounds. Common.

912. var. **glabrata,** Benth.

Keweenaw Co.,—Farwell.

328. LYCOPUS, Tourn. Water Horehound.

*913. **L. Virginicus,** L. Bugle-weed. Th.

Low grounds. Common.

914. **L. rubellus,** Moench.

Clinton Co.,—E. F. Smith; St. Clair Co.,—Brotherton.

*915. **L. sinuatus,** Ell. Th.

Frequent.

329. HYSSOPUS, Tourn. Hyssop.

916. **H.** officinalis, L.

Escaped from gardens. Flint; S. W.,—Winch. Cat.

330. PYCNANTHEMUM, Michx. Mountain Mint. Basil.

*917. **P. lanceolatum,** Pursh. C. & S.

Low grounds. Ionia Co.; Flint; Macomb Co., and southward. Frequent.

331. THYMUS, Tourn. Thyme.

918. **T.** Serpyllum, L. Creeping Thyme.

Flint,—Coleman Cat. Rarely escaped from gardens.

*919. **T.** vulgaris, L.

College grounds.

332. CALAMINTHA, Tourn. CALAMINT.

920. **C. Nuttallii, Gray.**

Drummond's Island, and northward, common. Not seen in C. of the State; S. E.,—Wright Cat.

*921. **C. Clinopodium, Benth. Basil.** Th.

Fields. Ionia Co.; Fort Gratiot,—Winch. Cat., and northward to Lake Superior.

333. HEDEOMA, Pers. MOCK PENNYROYAL.

*922. **H. pulegioides, Pers. American Pennyroyal.** C. & S.

Fields. Hubbardston; S. Mich.,—Wright Cat.; Macomb Co.; Lenawee Co.,—Dr. Beal.

334. MONARDA, L. HORSE-MINT.

923. **M. didyma, L. Bee-Balm. Oswego Tea.** S. W.

Rare in Michigan. Barron Lake,—Wheeler; Flint,—Dr. Clark.

*924. **M. fistulosa, L. Wild Bergamot.** Th.

Sandy soil. Common.

925. **var. mollis, Benth.**

Port Huron,—C. K. Dodge.

926. **M. punctata, L. Horse-Mint.** S.

Sandy soil. S. Mich.,—Wright Cat.; S. Haven,—Bailey; Grand Haven,—G. D. Sonee. Infrequent.

335. BLEPHILIA, Raf.

*927. **B. ciliata, Raf.** Th.

Dry ground. Ionia Co.; Ann Arbor, and Sault de Ste Marie,—Winch. Cat. Scarce.

*928. **B. hirsuta, Benth.** C. & S.

Low woods. S. Mich.,—Wright Cat.; northward to Ionia Co.

336. LOPHANTHUS, Benth. GIANT HYSSOP.

*929. **L. nepetoides, Benth.** C. & S.

Low grounds. Ionia Co.; Flint; S. W.,—Wright Cat.; Grosse Isle,—Miss Clark. Infrequent.

930. **L. scrophulariæfolius, Benth.** C. & S.

Low grounds. S. Mich.,—Wright Cat.; Lenawee Co.,—G. F. Comstock; Macomb Co.; Hubbardston. Infrequent.

337. NEPETA, L. CAT-MINT.

*931. **N. CATARIA, L. Catnip.** Th.

Near dwellings. Common.

*932. **N. GLECHOMA, Benth. Ground Ivy. Gill-over-the-Ground.** C. & S.

Sparingly escaped from culture. Flint; Grand Rapids,—Coleman Cat.; Cassopolis.

338. DRACOCEPHALUM, Tourn. DRAGON-HEAD.

933. **D. parviflorum, Nutt.** Th.

This interesting plant was first detected in the Lower Peninsula in June, 1876, when it was found in Roscommon Co., south of Houghton Lake. Alcona Co.; Hubbardston, Ionia Co. Rare southward.

339. SCUTELLARIA, L. SKULLCAP.

*934. **S. lateriflora, L. Mad-dog Skullcap.** Th.

Low grounds. Common.

935. **S. versicolor, Nutt.** S.

Banks of streams. S. Mich.,—Wright Cat.

936. **S. pilosa, Michx.**

S. W.,—Winch. Cat.; Gray's Manual, 6th edition.

937. **S. parvula, Michx.**

Ionia,—E. F. Smith; Islands east of Georgian Bay,—Bell, Can. Cat. Infrequent.

*938. **S. galericulata**, L. Th.

Low grounds. Common.

340. BRUNELLA, Tourn. Self-heal.

*939. **B. vulgaris**, L. Common Self-heal or Heal-all. Th.

Fields. Occasionally the flowers are white. Common.

341. PHYSOSTEGIA, Benth. False Dragon-head.

940. **P. Virginiana**, Benth.

Wet grounds; varies greatly. Ann Arbor,—Winch. Cat.; S. W.,—Wright Cat; Muir; Kalamazoo,—Bailey; Flint,—Dr. Clark, northward to Keweenaw Co.,—F.

342. MARRUBIUM, Tourn. Horehound.

*941. **M.** vulgare, L. Common Horehound.

Roadsides, escaped from cultivation. Ionia Co.; Flint; S. Mich.,—Winch. Cat.; Grand Traverse and Benzie Cos. Frequent.

343. LEONURUS, L. Motherwort.

*942. **L.** Cardiaca, L. Common Motherwort.

Waste grounds. Common.

344. LAMIUM, L. Dead-Nettle.

*943. **L.** amplexicaule, L.

Naturalized in gardens.

345. GALEOPSIS, L.

944. **G.** Tetrahit, L. Common Hemp-Nettle. Th.

Rare in C. of the State. Abundant at Mackinac,—Winch. Cat.; Cheboygan Co.,—B. & K.; Harbor Springs,—Wheeler.

945. **G.** Ladanum, L. Red Hemp-Nettle.

Ft. Gratiot and Sault de Ste. Marie,—Winch. Cat.

246. STACHYS, Tourn. Hedge-Nettle.

946. **S. hyssopifolia**, Michx. Th.

Wet grounds. S. Mich.,—Wright Cat.; Stanton,—E. J. Quackenbush. Rare.

947. **S. palustris**, L.

Keweenaw Co.,—F.

948. **S. aspera**, Michx. L. P.

Wet grounds. Infrequent.

*949. var. **glabra**, Gray.

Rare.

LXVIII. PLANTAGINACEÆ. Plantain Family.

347. PLANTAGO, Tourn. Plantain. Ribwort.

*950. **P. cordata**, Lam. C. & S.

Borders of streams. S. Mich.,—Wright Cat.; Tuscola Co.,—Winch. Cat.; Ionia Co.; Clinton Co.; Flint; Macomb Co. Frequent.

*951. **P. major**, L. Common Plantain. Th.

Waysides and about dwellings everywhere. Decaisne's variety *minima* occurs in salt marshes; Maple River, Clinton Co., etc. Common.

*952. **P. Rugelii**, Decaisne.

Waste places. Often confounded with the previous species. Frequent.

*953. **P. LANCEOLATA**, L. Ripplegrass. Ribgrass. English Plantain. C. & S.
Meadows and fields. Too common. The seeds are often mixed with clover seed.

LXIX. ILLECEBRACEÆ. KNOTWORT FAMILY.

348. ANYCHIA, Michx. FORKED CHICKWEED.

954. **A. dichotoma**, Michx. S. W.
S. Mich.,—Dr. Wright; Ann Arbor; Watkins Sta.,—Dr. A. B. Lyons.

349. SCLERANTHUS, L. KNAWEL.

*955. **S. ANNUUS**, L.
Naturalised on the Agri. College grounds.

LXX. AMARANTACEÆ. AMARANTH FAMILY.

350. AMARANTUS, Tourn. AMARANTH.

956. **A. HYPOCHONDRIACUS**, L.
Scarcely escaped from gardens. Ann Arbor,—Miss Clark.

*957. **A. RETROFLEXUS**, L. Tn.
A common weed in gardens.

958. **A. CHLOROSTACHYS**, Willd.
Detroit. Infrequent.

*959. **A. albus**, L. Tumble Weed. Th.
Fields and gardens; less troublesome than the preceding species. Frequent.

*960. **A. blitoides**, Wats.
Lately introduced from the west, spreading rapidly along railroad tracks.

351. ACNIDA, Mitch. WATER-HEMP.

*961. **A. tuberculata**, Moq. C. & S.
Low grounds. S. Mich.,—Winch. Cat.; Ionia Co.; Macomb Co. Frequent.

LXXI. CHENOPODIACEÆ. GOOSEFOOT FAMILY.

352. CYCLOLOMA, Moquin. WINGED PIGWEED.

962. **C. platyphyllum**, Moquin.
Keweenaw Co.,—F.

353. CHENOPODIUM, Tourn. GOOSEFOOT. PIGWEED.

*963. **C. ALBUM**, L. Lamb's-Quarters. Pigweed. Th.
Waste and cultivated ground. Common.

*964. **C. URBICUM**, L. S.
Waste grounds. Ionia Co.; Flint; Grand Rapids,—Coleman Cat. Infrequent

965. **C. MURALE**, L. C. & S.
Grand Rapids,—Coleman Cat.

*966. **C. hybridum**, L. Maple-leaved Goosefoot. Th
Waste grounds. Common.

*967. **C. GLAUCUM**, L. Oak-leaved Goosefoot.
Lansing, College grounds; Detroit.

968. **C.** Bonus-Henricus, L. Good-King-Henry.
Flint,—Dr. Clark. Infrequent.

*969. **C. capitatum,** Watson. Strawberry Blite. Th.
Dry, rich grounds. Very noticeable from the fleshy, bright-red calyx. Common.

*970. **C.** Botrys, L. Jerusalem Oak. Feather Geranium.
Escaped from gardens. Abundant at Indian River,—Wheeler.

971. **C.** ambrosioides, Mexican Tea. S.
Waste places. Macomb Co.; Detroit; Ann Arbor,—Miss Clark; S. W.,—Wright Cat. Scarce.

972. var. anthelminticum, Gray.
Detroit.

354. ATRIPLEX, Tourn. Orache.

*973. **A. patulum,** L., var. **hastatum,** Gray.
Common at Detroit,—Dr. A. B. Lyons. Naturalized at Lansing.

974. var. **littorale,** Gray.
Detroit; "along the Great Lakes,"—Gray's Manual.

355. CORISPERMUM, A. Juss. Bug-seed.

975. **C. hyssopifolium,** L.
S. Haven,—Bailey; and northward to L. Superior, along the shores of the Great Lakes.

LXXII. PHYTOLACCACEÆ. Pokeweed Family.

356. PHYTOLACCA, Tourn. Pokeweed.

*976. **P. decandra,** L. Garget. Poke. Scoke. Pigeon Berry. C. & S.
Fields. Frequent.

LXXIII. POLYGONACEÆ. Buckwheat Family.

357. RUMEX, L. Dock. Sorrel.

977. **R.** Patientia, L. Patience Dock.
Adventitious at Portland,—C. F. Wheeler.

*978. **R. Britannica,** L. Great Water-Dock. Th.
Wet places. S. Mich.,—Winch. Cat.; Ionia Co.; Flint; Macomb Co.; and northward. Frequent.

*979. **R. altissimus,** Wood. Pale Dock.
Sault de Ste. Marie,—Winch. Cat.; Ionia. Apparently introduced at the College. Rare.

980. **R. salicifolius,** Weinmann. White Dock. N. & U. P.
Shore of Little Traverse Bay; and northward. Scarce.

*981. **R. verticillatus,** L. Swamp Dock. L. P.
River banks. Frequent.

*982. **R.** crispus, L. Curled Dock. Narrow Dock. Th.
Everywhere in fields.

*983. **R.** obtusifolius, L. Bitter Dock. Th.
Meadows and fields. Frequent.

984. var. discolor, Wall.
Formerly mistaken for *R. sanguineus, L.*

985. **R.** obtusifolius × crispus, Trelease.
North Manitou Isle.,—Mrs. Wislizenus. Trelease, *Revision of Rumex.*

*986. **R.** ACETOSELLA, L. Field or Sheep Sorrel. Th.

Sterile fields. Common.

987. **R.** ACETOSA, L. Sorrel Dock. U. P.

Very abundant at Point-aux-Pins, above Sault de Ste. Marie,—Macoun; N. shore of Lake Superior,—Pitcher, Trelease, *Revision of Rumex.*

358. POLYGONUM, Tourn. KNOTWEED.

*988. **P. aviculare,** L. Th.

The commonest of weeds.

*989. **P. erectum,** L.

Waste places with the preceding species. Common.

*990. **P. tenue,** Michx.

Sterile soil. S. Mich.,—Wright Cat.; common in Ionia Co.; Macomb Co., and northward.

*991. **P. lapathifolium,** L. Th.

River banks. Ionia Co.; Grand Rapids,—Coleman Cat.; Keweenaw Co.,—F. Frequent.

992. var. **incanum,** Koch.

Keweenaw Co.,—F.; L. Superior,—O. B. Wheeler.

*993. **P. Pennsylvanicum,** L. C. & S.

Low grounds. Ionia Co.; Clinton Co.; Flint; S. Mich.,—Wright Cat. Frequent.

*994. **P. amphibium,** L. Th.

Borders of ponds. Frequent.

*995. **P. Muhlenbergii,** Watson.

E. shore Lake Huron,—J. Macoun; Ionia Co.; Flint; Grand Rapids; Indian River; Black Lake; Cheboygan Co.

*996. **P. Hartwrightii,** Gray. Th.

Kalamazoo,—Tuthill; Indian River; Black Lake, Cheboygan Co.,—B. and K.; Lenawee Co.,—Dr. Beal; Keweenaw Co.,—F.

997. **P.** ORIENTALE, L. Prince's Feather.

Sparingly escaped from gardens.

*998. **P.** PERSICARIA, L. Lady's Thumb. Th.

Waste places. Common.

*999. **P. hydropiperoides,** Michx. Mild Water-Pepper. C. & S.

Wet places. Common.

*1000. **P. Hydropiper,** L. Common Smartweed or Water-Pepper. Th.

Moist grounds. Common.

*1001. **P. acre,** HBK. Water Smartweed. L. P.

Wet places. Ann Arbor; Ionia Co.; Mackinac,—Winch. Cat.; Flint. Frequent.

1002. **P. viviparum,** L. U. P.

Shore of L. Superior,—Gray; Isle Royale, common,—Whitney Cat.

*1003. **P. Virginianum,** L. C. & S.

Thickets. Common.

1004. **P. arifolium,** L. Halberd-leaved Tear-thumb. L. P.

Low grounds. South Haven,—Bailey; Gros Cap, L. Mich.—Winch. Cat.; S. Mich.,—Wright Cat. Infrequent.

*1005. **P. sagittatum,** L. Arrow-leaved Tear-thumb. Th.

Low grounds. Frequent.

[P. RAMOSISSIMUM, Michx.

Should be looked for, as it is found on Manitoulin Islands,—Can. Cat.]

*1006. **P.** CONVOLVULUS, L. Black Bindweed. Th.

Waste grounds. Common.

1007. **P. cilinode,** Michx. Th.

Copses. S. Haven,—Bailey; Lyons. Common northward.

*1008. **P. dumetorum,** L., var. **scandens,** Gray. Climbing False Buckwheat. Th.

Moist thickets. Frequent.

359. FAGOPYRUM, Tourn. BUCKWHEAT.

*1009. **F.** ESCULENTUM, Moench. Buckwheat.

Persistent in fields.

360. POLYGONELLA, Michx.

1010. **P. articulata,** Meisn. N. & U. P.

Traverse City,—Winch. Cat.; L. Superior,—Whitney Cat.; Oscoda; Black Lake, Cheboygan Co.,—B. & K.; Indian River,—Wheeler; Harrison,—Dr. Beal; Crawford Co.,—O. Palmer.

LXXIV. PODOSTEMACEÆ. RIVER-WEED FAMILY.

361. PODOSTEMON, Michx. RIVER-WEED.

1011. **P. ceratophyllus,** Michx.

Detroit,—Dr. A. B. Lyons.

LXXV. ARISTOLOCHIACEÆ. BIRTHWORT FAMILY.

362. ASARUM, Tourn. ASARABACCA. WILD GINGER.

*1012. **A. Canadense,** L. Th.

Moist woods. Common.

363. ARISTOLOCHIA, Tourn. BIRTHWORT.

1013. **A. Serpentaria,** L. Virginia Snakeroot.

In Gray's Manual, said to occur in the S. part of the State.

LXXVI. PIPERACEÆ. PEPPER FAMILY.

364. SAURURUS, L. LIZARD'S-TAIL.

*1014. **S. cernuus,** L. C. & S.

Swamps. Common.

LXXVII. LAURACEÆ. LAUREL FAMILY.

365. SASSAFRAS, Nees. SASSAFRAS.

*1015. **S. officinale,** Nees. L. P.

Woods,—sandy soil. A shrub or low tree, reported by Mr. Spicer, near Manistee; Hamlin Lake, Mason Co.,—C. E. St. Johns. Frequent.

366. LINDERA, Thunb. WILD ALLSPICE. FEVER-BUSH.

*1016. **L. Benzoin,** Blume. Spice-bush. Benjamin-bush. C. & S.

Damp woods. Frequent.

LXXVIII. THYMELÆACEÆ. Mezereum Family.

367. DIRCA, L. Leatherwood. Moosewood.

*1017. **D. palustris, L.** Th.

Woods. The tough bark used for thongs by Indians. Ann Arbor,—Winch. Cat.; S. Haven.—Bailey, and northward. Frequent.

LXXIX. ELÆAGNACEÆ. Oleaster Family.

368. SHEPHERDIA, Nutt.

*1018. **S. Canadensis, Nutt.** Th.

Gravelly banks. "On the western islands in Lake Erie,"—Dr. D. Cooley,; Ann Arbor,—Winch. Cat.; South Haven,—Bailey; Flint, and northward. Abundant at Petoskey. "A common short shrub," (L. Superior),—Whitney Cat.; Benton Harbor,—Wheeler.

LXXX. SANTALACEÆ. Sandalwood Family.

369. COMANDRA, Nutt. Bastard Toad-flax.

*1019. **C. umbellata, Nutt.** Th.

Dry ground. Indifferently parasitic on roots. Common.

1020. **C. livida, Richards.** N. & U. P.

"Sandy shores, L. Superior,"—Gray; Traverse City,—Dr. A. B. Lyons; Isle Royale,—Whitney Cat; Keweenaw Co.,—F.

LXXXI. EUPHORBIACEÆ. Spurge Family.

370. EUPHORBIA, L. Spurge.

1021. **E. polygonifolia, L.** Th.

Sandy shores of the Great Lakes. S. Haven,—Bailey; Ft. Gratiot,—Winch. Cat., etc. Frequent.

1022. **E. serpyllifolia, Pers.**

Keweenaw Co.,—F.

*1023. **E. maculata, L.**

Roadsides and fields, everywhere.

1024. **E. humistrata, Engelm.**

Flint,—Dr. D. Clark.

*1025. **E. Preslii, Guss.** C. & S.

Cultivated soil, and waste places. Detroit,—Dr. A. B. Lyons; Ionia; Grand Rapids. Infrequent.

*1026. **E. corollata, L.** C. & S.

Sandy soil. Frequent.

1027. **E. platyphylla, L.**

Macomb Co.; "Along the Great Lakes,"—Gray; Lake Huron,—Dr. Todd.

1028. **E. Helioscopia, L.**

Common at Detroit,—Dr. A. B. Lyons.

*1029. **E. Esula, L.**

Escaped from cultivation.

[E. serpens, HBK.

Introduced at Windsor, Ont.,—J. Macoun. Probably in Detroit.]

*1030. **E. Cyparissias**, L.
Escaped from cultivation. Frequent.

1031. **E. commutata**, Engelm.
Ann Arbor,—Winch. Cat.; Flint. Infrequent.

371. ACALYPHA, L. Three-seeded Mercury.

*1032. **A. Virginica**, L. Th.
Open woods. Variable. Common.

1033. var. **gracilens**, Muell.
Detroit,—Dr. D. Clark.

LXXXII. URTICACEÆ. Nettle Family.

372. ULMUS, L. Elm.

*1034. **U. fulva**, Michx. Slippery or Red Elm. Th.
Rich soil. Frequent.

*1035. **U. Americana**, L. White or American Elm. Th.
Low grounds. Common.

*1036. **U. racemosa**, Thomas. Cork or Rock Elm. Th.
River banks. Frequent.

373. CELTIS, Tourn. Nettle-tree. Hackberry.

*1037. **C. occidentalis**, L. Hackberry. Sugarberry. C. & S.
River banks. A medium or large sized tree. Frequent.

374. CANNABIS, Tourn. Hemp.

*1038. **C.** sativa, L. Hemp.
Waste places. Frequent.

375. HUMULUS, L. Hop.

1039. **H. Lupulus**, L. Common Hop. Th.
Banks of streams. Frequent northward.

376. MORUS, Tourn. Mulberry.

*1040. **M. rubra**, L. Red Mulberry. C. & S.
A small tree on river bottoms.

377. URTICA, Tourn. Nettle.

*1041. **U. gracilis**, Ait. Th.
Moist ground. Common.

1042. **U.** dioica, L. Th.
Waste places. Occasional.

378. LAPORTEA, Gaud. Wood-Nettle.

*1043. **L. Canadensis**, Gaud. C. & S.
Thick woods along streams. Common.

379. PILEA, Lindl. Richweed. Clearweed.

*1044. **P. pumila**, Gray. Richweed. Clearweed. C. & S.
Low woods. Common.

380. BŒHMERIA, Jacq. False Nettle.

*1045. **B. cylindrica**, Willd. C. & S.
Moist ground. Common.

LXXXIII. PLATANACEÆ. Plane-tree Family.

381. PLATANUS, L. Sycamore. Buttonwood.

*1046. **P. occidentalis, L.** C. & S.

Along our rivers. "The largest tree of the Atlantic forests."—Sargent.

LXXXIV. JUGLANDACEÆ. Walnut Family.

382. JUGLANS, L. Walnut.

*1047. **J. cinerea, L.** Butternut.

Low rich woods.

*1048. **J. nigra, L.** Black Walnut. C. & S.

Becomming scarce.

383. CARYA, Nutt. Hickory.

*1049. **C. alba, Nutt.** Shell-bark or Shag-bark Hickory. C. & S.

Timber very valuable. Common.]

1050. **C. sulcata, Nutt.** Big Shell-bark. King-nut. S.

River bottoms. Rare, except in the extreme south.

*1051. **C. tomentosa, Nutt.** Moker-nut. White-heart Hickory. C. & S.

Dry woods. Flint; Grand Rapids,—Coleman's Cat.; Three Rivers; Cassopolis,—Wheeler. Rare.

*1052. **C. microcarpa, Nutt.** S.

Ann Arbor; Cassopolis; Three Rivers.

1053. **C. porcina, Nutt.** Pig-nut or Broom Hickory. C. & S.

Woods. Nuts pear-shaped or oblong.

*1054. **C. amara, Nutt.** Bitter-nut or Swamp Hickory. C. & S.

Moist soil. No member of this family gets much north of lat. 43°. Common.

LXXXV. MYRICACEÆ. Sweet-Gale Family.

384. MYRICA, L. Bayberry. Wax-Myrtle.

1055. **M. Gale, L.** Sweet Gale. N. & U. P.

Swamp near Crooked Lake, Emmet Co.; Harrisville; Manistee,—E. J. Hill; Isle Royale,—Dr. A. B. Lyons.

1056. **M. cerifera, L.** Bayberry. Wax-Myrtle.

S. Mich.,—Winch. Cat.

1057. **M. asplenifolia, Endl.** Th.

South,—Wr. Cat.; Detroit,—Dr. A. B. Lyons. Very common in the center of the State and northward throughout the pine country, of which it is a characteristic species.

LXXXVI. CUPULIFERÆ. Oak Family.

385. BETULA, Tourn. Birch.

*1058. **B. lenta, L.** Cherry Birch. Sweet or Black Birch. Th.

Ann Arbor,—Allmend. Cat.; S. Haven,—Bailey; Lenawee Co.,—Dr. Beal; Hubbardston; Flint and northward to L. Superior. Rare in the south, but attains a "monstrous size" on Drummond's Island,—Winch. Cat.

1059. **B. lutea,** Michx. f. Yellow or Gray Birch. Th.

Ann Arbor,—Winch. Cat.; S. Haven,—Bailey; to L. Superior. "Common along the line of the F. & P. M. R. R. and northward to the Traverse country; a large tree; timber valuable,"—Dr. Beal. Rare south of the Grand-Saginaw Valley.

*1060. **B. papyrifera,** Marshall. Paper or Canoe Birch. White Birch. Th.

Extends southward to Lansing and perhaps further. Frequent at Crystal Lake, Montcalm Co., as a small tree. Often springs up, forming a dense thicket, where pine lands have been burned over.

*1061. **B. pumila,** L. Low Birch. Th.

Swamps. Variable. Frequent.

1062. **B. glandulosa,** Michx. Dwarf Birch. U. P.

Burt's MS. Cat; Lake Superior.

386. ALNUS, Tourn. ALDER.

1063. **A. viridis,** DC. Green or Mountain Alder. U. P.

"Dry rocky land,"—Whitney Cat.; Isle Royale,—Dr. A. B. Lyons; high hills, Escanaba,—E. J. Hill; Keweenaw Co.,—F. Common.

*1064. **A. incana,** Willd. Speckled or Hoary Alder. Th.

Borders of streams. The prevailing Alder in center of the State and in U. P. Common.

1065. **A. serrulata,** Willd. Smooth Alder.

Macomb Co.; Traverse City and S. Mich.,—Winch. Cat.; Burt's MS. Cat. Rare or local.

387. CORYLUS, Tourn. HAZEL-NUT. FILBERT.

*1066. **C. Americana,** Walt. Wild Hazel-nut. Th.

Thickets. Common.

1067. **C. rostrata,** Ait. Beaked Hazel-nut. Th.

Hubbardston; and common northward.

388. OSTRYA, Micheli. HOP-HORNBEAM. IRON-WOOD.

*1068. **O. Virginica,** Willd. American Hop-Hornbeam. Lever-wood. Th.

Rich woods. Common.

389. CARPINUS, L. HORNBEAM. IRON-WOOD.

*1069. **C. Caroliniana,** Walter. American Hornbeam. Blue or Water Beech. Th.

Along streams. Wood of this and the preceding tough and durable; used for wedges, levers, etc.

390. QUERCUS, L. OAK.

*1070. **Q. alba,** L. White Oak. Th.

Rich woods. Rare in U. P., Menominee Co.,—Burt MS. Cat., etc. Our most valuable species. Much used in inside finishing, carriage-making, etc., etc., wherever a strong, durable, and beautiful timber is desired. Common.

*1071. **Q. macrocarpa,** Michx. Bur Oak. Over-cup or Mossy-cup Oak.

Rich soil. Common. A form of this oak occurs in Cheboygan Co.,—B. & K.

*1072. **Q. bicolor,** Willd. Swamp White Oak.

Low ground. A large tree. Common.

*1073. **Q. Muhlenbergii,** Engelm. Yellow Oak. Chestnut-Oak. C. & S.

Rich woods. A medium sized tree. Infrequent.

1074. **Q. prinoides,** Willd. Dwarf Chestnut-Oak. C. & S.

A low shrub or small tree. Macomb Co.; Barron Lake, Cass Co.; Brighton,—Dr. J. B. Steere; Hubbardston; Muir; Gratiot Co. This and the preceding seem to run together. Infrequent.

*1075. **Q. rubra,** L. Red Oak. Th.

In the C. & S., a large tree; or, at Petoskey, a low tree or tall shrub; in U. P., along the shore, a low shrub or scraggy tree (the common form), or, in Ontonagon valley, a good-sized tree,—Whitney. *Q. ambigua,* Mx., apparently belongs here. (See Engelm, "*Oaks of the U. S.*" Tr. Ac. Sc., St. Louis, Vol. III.) "One of the most variable of the Atlantic species,"—Engelmann.

1076. **Q. coccinea,** Wang. Scarlet Oak. L. P.

Inner bark reddish; scales of involucre, brown, glabrate, appressed. In the C., this species blossoms and puts forth its leaves about two weeks earlier than the next, and the leaves are smooth and glossy before the leaves of the next have become well divested of their reddish down. Frequent.

* 1077. **Q. tinctoria,** Bartram. Quercitron. Yellow-barked or Black Oak. L. P.

Inner bark bright yellow; scales of involucre yellowish-canescent, somewhat sqarrose; leaves less pinnatified, more *obovate* in outline and less glossy-green than those of *Q. coccinea*. This species and the preceding occur together in the C., and are seldom large—usually 40-50 ft., and 12-15 inches in diameter. Considerable study has shown no gradations between the two forms, except one anomalous specimen, with very long acorns, and some characteristics of both species.

1078. **Q. palustris,** Du Roi. Swamp Spanish or Pin Oak. S. E.

Only seen in the S. E. portion of the State; Port Huron,—Dodge; Belle Isle; Monroe Co.

1079. **Q. imbricaria,** Michx. Laurel or Shingle Oak. S.

Barrens, Galesburg,—H. Dale Adams; Ann Arbor,—Winch. Cat.; S. Mich.,—Dr. Wright. Rare.

391. CASTANEA, Tourn. Chestnut.

1080. **C. sativa,** Mill., var. **Americana,** Watson. Chestnut. S. E.

Occurs abundantly along an outcrop of Helderberg limestone in E. Monroe Co. and Wayne Co.—Wheeler; Ann Arbor,—Dr. Steere; Detroit River to Lake St. Clair,—Macoun, in Can. Cat.

392. FAGUS, Tourn. Beech.

* 1081. **F. ferruginea,** Ait. American Beech. Th.

Common in L. P., but rare in U. P. Occurs at Mackinac and Pictured Rocks; St. Mary's River,—Macoun.

LXXXVII. SALICACEÆ. Willow Family.

393. SALIX, Tourn. Willow. Osier.

* 1082. **S. nigra,** Marshall. Black Willow. Th.

Along streams; a small tree.

* 1083. **S. amygdaloides,** Anders. Th.

Flint,—Dr. Clark; Hubbardston; Harrisville.

* 1084. **S. lucida,** Muhl. Shining Willow. Th.

Along streams. Variable. Common.

* 1085. **S.** ALBA, L., var. VITELLINA, Koch. White Willow.

Naturalized from Europe.

* 1086. **S. longifolia,** Muhl. Th.

Wet places. Common.

* 1087. **S. rostrata,** Richardson. Th.

Moist or dry ground. Common.

* 1088. **S. discolor,** Muhl. Glaucous Willow. Th.

River banks. This species and the preceding are very much visited by bees in early spring for pollen and honey. Common.

1089. var. **eriocephala,** Anders.

Keweenaw Co.,—F.

* 1090. var. **prinoides,** Anders.

Common.

* 1091. **S. humilis,** Marshall. Prairie Willow. Th.

Common northward to Marquette Co.,—Burt MS. Cat. A very broad leaved form with the young leaves round-obovate to nearly round, collected by O. A. Farwell, Keweenaw Co.

1092. **S. tristis,** Ait. Dwarf Gray Willow.

Alcona Co.; Barron lake. Cass Co.; Monroe Co.; Infrequent.

*1093. **S. sericea,** Marshall. Silky-Willow.

Drummond's Is.,—Winch. Cat.; Ionia Co.; and southward to S. Haven,—Bailey; shore of Black lake, Cheboygan Co. Very common in central part of the State.

*1094. **S. petiolaris,** Smith. Petioled Willow. Th.

With the last. From Sault de Ste. Marie southward. Ionia Co. Frequent.

1095. **S. petiolaris,** Smith, var. **gracilis,** Anders.

S. western part of the State.

*1096. **S. candida,** Willd. Hoary Willow. Th.

Usually in tamarack swamps. Rare in S. part of the State. Common northward.

*1097. **S.** VIMINALIS, Basket Osier.

Woodward lake, Ionia Co.; S. Haven,—Bailey.

*1098. **S. cordata,** Muhl. Heart-leaved Willow. Th.

Along streams. Narrow-leaved forms occur in the central and southern parts of the State; at Petoskey, broadly ovate-heart-shaped leaved forms occur. Common.

*1099. **S. glaucophylla,** Bebb. Th.

Hubbardston; Petoskey; frequent along the shores of Little Traverse Bay, and shores of the Great Lakes. Rare in the interior.

1100. var. **angustifolia,** Bebb.

Sturgeon Point, Alcona Co.

1101. var. **brevifolia,** Bebb.

Shores of Little Traverse bay,—C. F. Wheeler.

1102. **S. balsamifera,** Barrett.

Flint,—Dr. D. Clark; Keweenaw Co.,—F.

1103. var. **vegeta,** Bebb.

1104. var. **lanceolata,** Bebb.

These two varieties occur in Keweenaw Co.,—F.

1105. **S. adenophylla,** Hook. Tomentose Willow.

Low, 2-5 feet. Beach sand, Lake Michigan, and northward. Petoskey; St. Jo., Dr. Wright in Torr. Herb.,—Bebb. Hooker's original specimens came from Labrador.

*1106. **S. myrtilloides,** L. Myrtle Willow. Th.

Sphagnous swamps. S. E.,—Winch. Cat. Ionia, etc., to L. Superior. Frequent.

1107. var. **pedicellaris,** Anders.

Keweenaw Co.,—F.

1108. **S.** SERICEA×CANDIDA, Bebb., forma denudata, Bebb, Herb. Salicum, No. 33.

Flint,—Dr. Clark.

1109. **S.** SERICEA×CANDIDA, Bebb. Herb. Salicum, No. 32.

Flint,—Dr. D. Clark; Hubbardston,—C. F. Wheeler.

1110. **S.** PETIOLARIS×CANDIDA, Bebb. Herb. Salicum, No. 30.

Originally from Hascall's swamp, near Flint, Mich., where it was discovered by Daniel Clarke, M. D., in 1872—the locality being soon after obliterated. Should it be deemed advisable hereafter to treat supposed hybrids as quasi-species, after the manner of Andersson, Kerner and others, I very much wish that this beautiful willow should be called S. Clarkei, to commemorate the name of a botanist who has done more than any other to give an impetus to the study of hybrid willows in this country,—M. S. Bebb, 1880. Swamp near Hubbardston, Ionia Co.,—C. F. Wheeler.

1111. **S.** ROSTRATA (×PETIOLARIS?), No. 37. Bebb. Herb. Salicum.

Flint,—Dr. D. Clark.

1112. **S.** CANDIDA×CORDATA, Bebb.

Flint,—Dr. D. Clark; Hubbardston,—C. F. Wheeler.

*1113. **S.** CORDATA×SERICEA, Bebb.

Bailey; Flint,—Dr. D. Clark.

*1114. **S.** HUMILIS×DISCOLOR, Bebb.

Keweenaw Co.,—Farwell.

*1115. **S.** FRAGILIS×ALBA, Wimmer.

Coleman's Catalogue; Palmer's Catalogue.

394. POPULUS, Tourn. POPLAR. ASPEN.

1116. **P.** ALBA, L. White Poplar. Abele.

Occasionally escaped from cultivation.

*1117. **P. tremuloides,** Michx. American Aspen. Th.

Woods and lake shores; most abundant in U. P.,—Whitney. Common.

*1118. **P. grandidentata,** Michx. Large-toothed Aspen. Th.

Woods. Common northward, but "rare in U. P.,"—Whitney Cat.

*1119. **P. balsamifera,** L. Balsam Poplar. Th.

River banks. A small tree in Michigan.

*1120. var. CANDICANS, Gray.

Common in cultivation.

*1121. **P. monilifera,** Ait. Cotton-wood. Necklace Poplar. L. P.

Sometimes a large tree, three feet in diameter. Infrequent. Collected by the Forestry Commission Expedition party, June, 1888, in Alcona Co.

LXXXVIII. EMPETRACEÆ. CROWBERRY FAMILY.

395. EMPETRUM, Tourn. BLACK CROWBERRY.

1122. **E. nigrum,** L. U. P.

Whitney Cat. Pictured Rocks,—G. H. Hicks.

LXXXIX. CERATOPHYLLACEÆ. HORNWORT FAMILY.

396. CERATOPHYLLUM, L. HORNWORT.

*1123. **C. demersum,** L. Th.

Ponds. Fruit in August. Common.

XC. HYDROCHARIDACEÆ. FROG'S-BIT FAMILY.

397. ELODEA, Michx.

*1124. **E. Canadensis,** Michx. Water-weed. Th.

Slow streams. Common.

398. VALLISNERIA, L.

*1125. **V. spiralis,** L. Tape-grass. Eel-grass. Th.

Ann Arbor,—Winch. Cat.; S. Haven,—Bailey; Hubbardston, to Petoskey; Lake Superior,—Agassiz. Slow streams. Common in Grand River and tributaries.

XCI. ORCHIDACEÆ. ORCHIS FAMILY.

399. MICROSTYLIS, Nutt. ADDER'S-MOUTH.

1126. **M. monophyllos,** Lindl.

Hubbardston; Flint; Macomb Co.; bogs near Long lake and Black lake, Cheboygan Co.,—B. & K. Rare.

1127. **M. ophioglossoides,** Nutt.

Ann Arbor,—Allmendinger Cat.; Hubbardston; Lenawee Co.,—G. F. Comstock. Rare.

400. LIPARIS, Richard.

1128. **L. liliifolia,** Richard.

S. W.—Wright's Cat.

1129. **L. Lœselii,** Richard. Twayblade. Th.

Ann Arbor,—Allmendinger Cat.; abundant in a tamarack swamp near Hubbardston; S. Haven,—Bailey; Flint; Macomb Co.; Keweenaw Co.,—F.; Sault de Ste Marie,—Porter.

401. CALYPSO, Salisb.

1130. **C. borealis,** Salisb.

Forty-mile Point, Presque Isle Co.,—Winch. Cat.; shores of Higgins lake,—Dr. D. Cooley; Mount Pleasant,—E. F. Smith; Grayling,—G. H. Hicks; Frankfort,—E. J. Parker; Keweenaw Co.,—F.; Mackinac,—Whitney Cat.; L. Superior,—J. Macoun, in Can. Cat.

402. TIPULARIA, Nutt. Crane-fly Orchis.

1131. **T. discolor,** Nutt.

Coleman Cat.; "N. Mich., Dr. Cooley,"—Winch. Cat.; eastern coast of L. Huron,—J. Macoun. Our rarest orchid.

403. APLECTRUM, Nutt. Putty-root. Adam-and-Eve.

*1132. **A. hiemale,** Nutt.

Rich woods. Ann Arbor,—Allmend. Cat.; Detroit,—Gillman; Macomb Co.; Montcalm Co.; Flint; Hubbardston; Grand Rapids,—Colemans Cat.; Niles,—Mitchell; Keweenaw Co.,—F. Scarce.

404. CORALLORHIZA, Haller. Coral-root.

*1133. **C. innata,** R. Br. Th.

S. E.,—Wright Cat.; Park Lake, Clinton Co.; Harmon; Grayling; Frankfort; L. Superior, not rare,—Whitney Cat.

1134. **C. odontorhiza,** Nutt. Th.

Hubbardston; Flint; Frankfort; Oscoda; northward to L. Superior,—Whitney Cat.

*1135. **C. multiflora,** Nutt. Th.

Hubbardston; S. W.,—Wright Cat.; Cheboygan Co.,—B. & K.; northward to L. Superior.

1136. **C. striata,** Lindl. N. & U. P.

Frankfort; Comins, Oscoda Co.; abundant at Mackinac,—Whitney Cat.; Keweenaw Co.,—F. Becoming scarce.

405. LISTERA, R. Brown.

1137. **L. cordata,** R. Br. Twayblade. N. & U. P.

Whitney Cat.; and Isle Royale,—Dr. A. B. Lyons; Grayling,—G. H. Hicks; Keweenaw Co.,—F.; cedar swamps, Cheboygan Co.,—B. & K.

1138. **L. convallarioides,** Nutt. N. & U. P.

Not common. Whitney Cat.; Isle Royale,—Dr. A. B. Lyons; abundant at Pictured Rocks,—G. H. Hicks; Grand Traverse Co.; Cheboygan Co.,—B. & K.; Keweenaw Co.,—F.

406. SPIRANTHES, Richard. Ladies' Tresses.

1139. **S. latifolia,** Torr.

Drummond's Island, common, and S. E.,—Winch. Cat.; Hubbardston; Flint. Rare in L. P.

1140. **S. Romanzoffiana,** Chamisso. Th.

Borders of Mud Lake, Northport,—E. J. Hill; St. Clair Co.,—A. F. Foerste; Grayling,—G. H. Hicks; Caribou Islet,—Porter; northward to L. Superior. Infrequent southward.

*1141. **S. cernua,** Richard. Th.

Sphagnous swamps. Frequent.

1142. **S. gracilis,** Bigelow. L. P.

S. W.,—Wright's Cat.; Macomb Co.; Grand Rapids,—Coleman Cat.; Kalamazoo,—Tuthill; Long Lake and Pine Plains, Cheboygan Co.,—B. & K.

407. GOODYERA, R. Br. Rattlesnake-Plantain.

1143. **G. repens,** R. Br. Th.

Bangor, Van Buren Co.,—Bailey; Grand Rapids,—Coleman Cat.; Roscommon Co.,—Dr. Cooley; Petoskey and northward. Infrequent.

*1144. **G. pubescens**, R. Br. Th.

Woods. Frequent.

1145. **G. Menziesii**, Lindl. N. & U. P.

Grayling,—G. H. Hicks; Boyne Falls, Northport and Frankfort,—E. J. Hill; Petoskey; Isle Royale and Traverse Bay.,—Dr. A. B. Lyons; Keweenaw Co.,—F. Rare in Cheboygan Co.,—B. & K.

408. ARETHUSA, Gronov.

*1146. **A. bulbosa**, L. Th.

In sphagnous swamps. S. Mich.,—Wright Cat.; Ann Arbor,—Allmend. Cat.; Kalamazoo,—Tuthill; Hubbardston, and northward. Rare.

409. CALOPOGON, R. Br.

*1147. **C. pulchellus**, R. Br. Th.

Bogs. Common.

410. POGONIA, Juss.

*1148. **P. ophioglossoides**, Nutt. Th.

Bogs. Common.

1149. **P. pendula**, Lindl. S. W.

Dr. Wright; Calvin, Cass Co.,—I. N. Mitchell. Rare.

1150. **P. verticillata**, Nutt. C. & S.

Kalamazoo; Flint; Macomb Co. Rare.

411. ORCHIS, L.

*1151. **O. spectabilis**, L. Showy Orchis. C. & S.

Rich woods. Scarce.

1152. **O. rotundifolia**, Pursh.

Frankfort,—E. J. Parker; Marquette,—T. H. Danger; Lake Fumeé,—E. J. Hill.

412. HABENARIA, Willd. Rein-Orchis.

1153. **H. tridentata**, Hook. Th.

Lenawee Co.,—G. F. Comstock; S. W.,—Wright Cat.; Ann Arbor,—Allmend. Cat.; Hubbardston; Grayling,—G. H. Hicks; and northward.

1154. **H. virescens**, Spreng. L. P.

Macomb Co.; Ann Arbor,—Winch. Cat.; S. W.,—Wright Cat.; Cheboygan Co., infrequent,—B. & K.

*1155. **H. bracteata**, R. Br. Th

Ann Arbor and Emmet Co.,—Winch. Cat.; Macomb Co.; Kalamazoo; Hubbardston; Flint; and northward.

1156. **H. hyperborea**, R. Br. Th.

Wet woods. Frequent northward.

*1157. **H. dilatata**, Gray. Th.

S. E.,—Winch. Cat.; Constantine, and northward.

1158. **H. obtusata**, Richardson. N. & U. P.

Cheboygan Co.,—B. & K.; Pictured Rocks,—G. H. Hicks; Isle Royale,—Dr. A. B. Lyons; L. Superior, common,—Whitney Cat.; Cove I.; L. Huron,—Austin.

*1159. **H. Hookeri**, Torr. Th.

S. E.,—Winch. Cat.; Hubbardston; Flint; Lake Superior,—Whitney Cat. Rare southward.

*1160. **H. orbiculata**, Torr. Th.

Frequent in the pine region, not rare on U. P.,—Whitney Cat.; Hubbardston; Flint, etc.

*1161. **H. ciliaris**, R. Br. Yellow Fringed-Orchis.

Ann Arbor,—Winch. Cat.; Macomb Co.; Kalamazoo,—Tuthill; Niles,—I. N. Mitchell. Rare.

1162. **H. blephariglottis**, Torr. White Fringed-Orchis. C. & S.

S. Mich.,—Winch. Cat.; Stanton. Rare.

*1163. **H. leucophæa**, Gray.

Belle Isle,—Foerste; Ann Arbor,—Winch. Cat.; Pine Lake, Ingham Co.; Woodward Lake, Ionia Co.; Macomb Co.; Isle Royale,—Foote. Rare.

*1164. **H. lacera**, R. Br. Ragged Fringed-Orchis. Th.

Ann Arbor,—Winch. Cat.; Woodward Lake; Flint; Macomb Co.; north to Keweenaw Co.,—F. Infrequent.

*1165. **H. psycodes**, Gray. Th.

Low grounds. Frequent.

413. CYPRIPEDIUM, L. Moccason-flower.

1166. **C. arietinum**, R. Brown. Ram's-head Lady's Slipper.

Isle Royale,—Dr. A. B. Lyons; tamarack swamp ½ mile E. of Whittemore Lake,—W. H. Lewis, May, 1891. Rare.

1167. **C. candidum**, Muhl. Small White Lady's Slipper. Th.

Tamarack swamps. Ann Arbor,—Winch. Cat.; Kalamazoo; Macomb Co.; Flint; Hubbardston; Howell Junction,—Wheeler; Keweenaw Co.,—F. Rare.

*1168. **C. parviflorum**, Salisb. Smaller Yellow Lady's Slipper. Th.

Swamps. A slender species; leaves slightly pubescent, not much plaited; flowers much smaller than those of the next; corolla bright yellow and much brown spotted inside in lines; sepals and side petals dark brown-purple, the latter several times twisted. Usually grows in clumps, preferring very wet swamps. Frequent.

*1169. **C. pubescens**, Willd. Larger Yellow Lady's Slipper.

Woods, in moist or dry ground. Much coarser every way than the preceding, with strongly-plaited, hairy leaves, and large light yellow flowers, more or less brown-spotted. Small forms of this are often mistaken for *C. parviflorum*, but the two species are apparently distinct in Michigan. Frequent.

*1170. **C. spectabile**, Salisb. Showy Lady's Slipper. Th.

Swamps. The largest species, as well as the most beautiful; leaves frequently 6x10 inches. Ann Arbor,—Winch. Cat.; Kalamazoo,—Tuthill; Macomb Co.; Flint; Hubbardston; Keweenaw Co. Frequent.

*1171. **C. acaule**, Ait. Stemless Lady's Slipper. Th.

Dry woods, and sphagnous swamps. Frequent.

XCII. HÆMODORACEÆ. Bloodwort Family.

414. ALETRIS, L. Colic-root. Star-grass.

1172. **A. farinosa**, L. C. & S.

Addison,—G. F. Comstock; Howard City; Grand Rapids; Ann Arbor,—Allmend. Cat.; Macomb Co. Flint; Clarkston,—G. H. Hicks; Hubbardston. Rare.

XCIII. IRIDACEÆ. Iris Family.

415. IRIS, Tourn. Wild Flower-de-Luce.

*1173. **I. versicolor**, L. Larger Blue Flag. Th.

Low grounds. Common.

1174. **I. lacustris**, Nutt. Lake Dwarf Iris.

Bois Blanc I. and Drummond's I.,—Winch. Cat.; Mackinac.,—Whitney Cat.; "Shores of L. Huron and Mich.,"—Gray, Lewis Foote, *et al.*; Mackinaw City,—Wheeler.

416. SISYRINCHIUM, L. Blue-eyed Grass.

*1175. **S. angustifolium**, Mill. Th.

Moist grassy places.. Common.

1176. **S. anceps**, Cav. Th.

Palo; Petoskey; Keweenaw Co.,—F.

XCIV. AMARYLLIDACEÆ. Amaryllis Family.

417. HYPOXYS, L. Star-grass.

*1177. **H. erecta**, L. C. & S.
Meadows. Common.

XCV. DIOSCOREACEÆ. YAM FAMILY.

418. DIOSCOREA, Plumier. YAM.

*1178. **D. villosa**, Wild Yam-root. C. & S.
Rich woods. Frequent.

XCVI. LILIACEÆ. LILY FAMILY.

419. SMILAX, Tourn. GREENBRIER. CAT-BRIER.

*1179. **S. herbacea**, L. Carrion-Flower. Th.
River banks. Flowers much visited by blow-flies. Common.

*1180. var. **pulverulenta**, Gray.
Ann Arbor,—Allmend. Cat.; Owosso,—G. H. Hicks.

1181. **S. ecirrhata**, Watson.
Mich.,—Gray's Manual.

1182. **S. rotundifolia**, L. Common Greenbrier. Horse-brier. C. & S.
Ann Arbor,—Allmend. Cat.; Flint; Macomb Co.; Kent Co.,—Coleman Cat.; Benton Harbor. Infrequent.

*1183. **S. hispida**, Muhl. Th.
The common woody species in Ionia and adjacent counties. Ann Arbor,—Winch. Cat.; Hubbardston; Flint; Houghton lake; northward to Lake Superior,—Whitney Cat.

420. ALLIUM, L. ONION. GARLIC.

*1184. **A. tricoccum**, Ait. Wild Leek. Th.
Rich woods. Cattle pastured in woodlands in early spring are sure to find and eat this plant, and the "garlic" odor of wild leek is only too well known to butter buyers in the rural districts.

1185. **A. Schœnoprasum**, L. Chives. U. P.
Dr. A. B. Lyons; Gray's Manual; N. shore of Lake Superior,—Agassiz; Keweenaw Point,—F.

1186. **A. cernuum**, Roth. Wild Onion. S.
Ann Arbor,—Allmend. Cat.

*1187. **A. Canadense**, Kalm. Wild Garlic. C. & S.
Woods. Common.

421. CAMASSIA, Lindl

1188. **C. Fraseri**, Torr. Eastern Camass. Wild Hyacinth.
Adrian, Mich.,—Mrs. I. H. Wheeler; White Island in the Detroit river opposite Amherstburgh, 1882,—Dr. J. Macoun.

422. HEMEROCALLIS, L. DAY-LILY.

*1189. **H. FULVA**, L. Common Day-Lily.
Escaped from cultivation.

423. POLYGONATUM, Tourn. SOLOMON'S SEAL.

*1190. **P. biflorum**, Ell. Smaller Solomon's Seal. Th.
Ann Arbor,—Winch. Cat.; Ionia Co., and northward. Open woods. Common.

*1191. **P. giganteum**, Dietrich. Great S. S. Th.
River banks. Stems often very tall and channeled on one side. Intermediate forms between this and the preceding occur.

424. ASPARAGUS, Tourn. Asparagus.

*1192. **A. officinalis**, L. Garden Asparagus.

Sparingly escaped from gardens in older parts of the State.

425. SMILACINA, Desf. False Solomon's Seal.

*1193. **S. racemosa**, Desf. False Spikenard. Th.

Moist grounds. Common.

*1194. **S. stellata**, Desf. Th.

Moist banks. Common.

*1195. **S. trifolia**, Desf. Th.

Sphagnous swamps. Frequent.

426. MAIANTHEMUM, Wigg.

*1196. **M. Canadense**, Desf. Th.

Woods, everywhere.

427. STREPTOPUS, Michx. Twisted-Stalk.

1197. **S. amplexifolius**, DC.

Fort Gratiot,—Winch. Cat.; Houghton Lake to Lake Superior, where it is rare,—Whitney Cat.

1198. **S. roseus**, Michx.

Cedar swamps, Mt. Pleasant,—Chas. A. Davis; Cheboygan Co.,—B. & K.; Drummond's Is. and Sugar Is.,—Winch. Cat.; to L. Superior where it is very common.—Whitney Cat.

428. CLINTONIA, Raf.

1199. **C. borealis**, Raf. Th.

Follows the Lake Michigan shore down as far as S. Haven; on the eastern side of the State reaches to Macomb Co.,—Dr. D. Cooley; and in the center of the State is found in Ionia Co. Very common north of latitude 43°.

429. UVULARIA, L. Bellwort.

1200. **U. perfoliata**, L.

Rich woods. Marquette Co.,—Burt MS. Cat.; Flint; Macomb Co. Infrequent.

*1201. **U. grandiflora**, Smith. C. & S.

Rich woods. Common.

430. OAKESIA, Watson.

1202. **O. sessilifolia**, Watson. Th.

Low woods. Apparently infrequent S. Monroe Co.,—Wheeler; Ann Arbor,—Allmend. Cat.; Ypsilanti; Flint; Macomb Co.; Crystal Lake, Montcalm Co.,—E. F. Smith, and northward to Marquette Co.,—Whitney Cat.

431. ERYTHRONIUM, L. Dog's-tooth Violet.

*1203. **E. Americanum**, Ker. Yellow Adder's-tongue. Th.

Low copses. Common.

*1204. **E. albidum**, Nutt. White Dog's-tooth Violet. Th.

Ann Arbor,—Allmend. Cat.; Macomb Co.; Flint; Hubbardston. "At L. Superior Dr. Robbins found a plant like this but *yellow flowered*, a transition towards *E. grandiflorum*,"—Gray's Man.; Keweenaw Co.,—F.

432. LILIUM, L. Lily.

*1205. **L. Philadelphicum**, L. Wild Orange-red Lily. Th.

Ann Arbor,—Allmend. Cat.; Hubbardston; Petoskey, and northward. Not common in the central part of the State.

*1206. **L. superbum**, L. Turk's-cap Lily. C. & S.

Low grounds. Ann Arbor (Miss Clark),—Winch. Cat.; Flint; S. Haven,—Bailey; Alma,—C. A. Davis, Frequent.

1207. **L. Canadense,** L. Wild Yellow Lily.

Meadows and along streams. Northward, frequent.

433. MEDEOLA, Gronov. Indian Cucumber-root.

*1208. **M. Virginiana,** L. L. P.

Abundant at Gaylord, where it probably reaches its N. limits,—G. L. Stewart.

434. TRILLIUM, L. Wake Robin. Birthroot.

1209. **T. sessile,** L. S.

Dr. A. B. Lyons. St. Joseph,—Wheeler; Niles,—I. N. Mitchell. Rare.

1210. **T. recurvatum,** Beck. S. W.

Niles,—I. N. Mitchell.

*1211. **T. erectum,** L. Th.

Ann Arbor,—Winch. Cat.; Constantine; Port Huron,—Dodge. The white form with declinate pedicels is most common throughout, and the only form in the northern part of the State.

*1212. **T. grandiflorum,** Salisb. Th.

Rich woods. Exceedingly variable and apt to sport. Common.

*1213. **T. cernuum,** L.

S. Mich.,—Winch. Cat.; Macomb Co.; Flint; Grand Rapids,—Coleman Cat.; northward to Keweenaw Co.,—F. Infrequent.

1214. **T. nivale,** Riddell. Dwarf White Trillium. C. & S.

Low woods. One of our earliest spring flowers. Hubbardston; Ionia; Grand Rapids,—Coleman Cat.; Niles,—I. N. Mitchell. Rare.

1215. **T. erythrocarpum,** Michx. Painted T. Th.

S. Mich.,—Wright Cat.; not observed in the center of the State; Port Huron,—Dodge; Keweenaw Co.,—F. Infrequent.

435. CHAMÆLIRIUM, Willd. Devil's-Bit.

1216. **C. Carolinianum,** Willd. Blazing-Star.

Dr. A. B. Lyons.

436. TOFIELDIA, Hudson. False Asphodel.

1217. **T. palustris,** Hudson. U. P.

Isle Royale,—Dr. A. B. Lyons.

*1218. **T. glutinosa,** Willd. Th.

Sphagnous swamps. Frequent.

437. ZYGADENUS, Michx.

*1219. **Z. elegans,** Pursh. Th.

S. W.,—Wright Cat.; Dexter,—Dr. Elmore Palmer; Ann Arbor,—Allmend. Cat.; Grand Ledge; Clarkston,—G. H. Hicks; Ionia; Davisburgh; Petoskey. Rare.

XCVII. PONTEDERIACEÆ. Pickerel-weed Family.

438. PONTEDERIA, L. Pickerel-weed.

*1220. **P. cordata,** L. Th.

Borders of lakes and slow streams. Lakes in Oakland Co.; Ann Arbor; Ionia Co., and northward.

*1221. var. **angustifolia,** Torr.

Lake St. Clair; Pine Lake, Ingham Co.

439. HETERANTHERA, R. & P. Mud-Plantain.

*1222. **H. graminea,** Vahl. C. & S.

Ann Arbor,—Allmend. Cat.; Dexter,—Dr. Elmore Palmer; Grand Rapids; Hubbardston. In streams Common.

XCVIII. XYRIDACEÆ. YELLOW-EYED-GRASS FAMILY.

440. XYRIS, Gronov. YELLOW-EYED-GRASS.

1223. **X. flexuosa,** Muhl.

Macomb Co.; S. W.,—Wright Cat; Hubbardston,—Wheeler. Rare.

1224. var. **pusilla,** Gray,

Lake Superior,—Gray's Manual, 6th edition.

XCIX. COMMELINACEÆ. SPIDERWORT FAMILY.

441. COMMELINA, Dill. DAY-FLOWER.

1225. **C. Virginica,** L. S. W.

Wright Cat.

442. TRADESCANTIA, L. SPIDERWORT.

1226. **T. Virginica,** L. Common Spiderwort. C. & S.

Moist woods. Ionia Co.; Grand Rapids; Ann Arbor,—Allmendinger Cat.; Hillsdale Co. Frequent.

C. JUNCACEÆ. RUSH FAMILY.

443. JUNCUS, Tourn. RUSH. BOG-RUSH.

*1227. **J. effusus,** L. Common or Soft Rush. Th.

Marshy grounds. Common.

*1228. var. **conglomeratus,** Engelm.

Swamps; not so common as the species.

1229. **J. filiformis,** L.

Adrian,—Tuthill; Saginaw Bay,—Winch. Cat.; L. Superior,—Jno. Macoun. Rare.

1230. **J. Balticus,** Dethard, var. **littoralis,** Engelm. Th.

Sandy shores. S. Haven,—Bailey; to Petoskey; Port Huron; Oscoda, and northward. A form of this species is found at Hubbardston, Ionia Co.,—Wheeler.

1231. **J. stygius,** L.

"N. shore of Lake Superior, Mr. Wheeler,"—Gray's Manual, 5th edition; Marquette,—E. J. Hill.

1232. **J. marginatus,** Rostk. S.

S. Mich.,—Winch. Cat.; Macomb Co.,—Dr. D. Cooley; Grand Rapids,—Wheeler. Rare.

1233. **J. Vaseyi,** Engelm.

Detroit,—Lyons; Lake Superior,—Jno. Macoun.

1234. **J. Greenii,** Oakes & Tuck.

Head of Lake Michigan,—Gray's Manual, 6th edition; Detroit,—Wheeler.

*1235. **J. tenuis,** Willd. Th.

Roadsides. Very variable. Common.

1236 **J. Gerardi,** Loisel. Black-Grass.

"Rare about the Great Lakes,"—Gray's Manual.

*1237. **J. bufonius,** L. Th.

Roadsides. Common.

[JUNCUS LONGISTYLIS, Torr.

Rather common at Windsor, on the Detroit River, 1885,—Macoun.]

*1238. **J. pelocarpus,** E. Meyer. Th.

Shore of Woodward Lake, Ionia Co.; Pine Lake, Ingham Co.; Lake Superior; J. Macoun, Can. Cat; Bear Lake, Manistee Co.,—E. J. Hill; Macomb Co., Dr. D. Cooley. Infrequent.

*1239. **J. alpinus,** Villars, var. **insignis,** Fries. Th.

"Along the Great Lakes northward and westward."—Gray. Common. Along railroad track on Agricultural College Farm. This species has been mistaken by early collectors for *J. articulatus*, which "is confined to the New England States."—Engelmann.

*1240. **J. acuminatus,** Michx. Th.

Macomb Co.; Fruitport,—E. J. Hill; Hubbardston; Keweenaw Co.,—F.; north shore of Lake Superior,—Agassiz.

1241. **J. brachycarpus,** Engelm.

Dr. Engelmann.

1242. **J. scirpoides,** Lam.

Gray's Manual.

*1243. **J. nodosus,** L. Th.

Gravelly banks. Common. An intermediate form grows with the species on the shore of Little Traverse Bay,—Wheeler.

1244. var. **megacephalus,** Torr.

Flint; Hubbardston and southward.

*1245. **J. Canadensis,** J. Gay. Th.

Common.

*1246. var. **longicaudatus,** Engelm. Th.

Fruitport,—E. J. Hill; Macomb Co.; Hubbardston; northward to Sault de Ste. Marie,—Burgess.

*1247. var. **brachycephalus,** Engelm. S.

Hubbardston; Howell Junction.

1248. var. **coarctatus,** Engelm.

Detroit; north shore of Lake Superior,—Dr. Lyons.

444. LUZULA, DC. Wood-Rush.

*1249. **L. vernalis,** DC. Th.

Woods. Common.

1250. **L. spadicea,** DC., var. **melanocarpa,** Meyer. U. P.

Dr. A. B. Lyons. Shore of Lake Superior at the Pic, and along Current River, Thunder Bay,—Macoun.

*1251. **L. campestris,** DC. C. & S.

Dry woods. Frequent.

1252. **L. spicata,** Desvaux. U. P.

Dr. A. B. Lyons.

CI. TYPHACEÆ. Cat-tail Family.

445. TYPHA, Tourn. Cat-tail Flag.

*1253. **T. latifolia,** L. Common Cat-tail. Th.

Borders of streams. Common.

1254. **T. angustifolia,** L. S. E.

Detroit,—Dr. A. B. Lyons. Rare.

446. SPARGANIUM, Tourn. Bur-reed.

*1255. **S. eurycarpum,** Engelm. C. & S.

Borders of ponds. Frequent.

*1256. **S. simplex,** Hudson. Th.

Fruitport,—E. J. Hill; Oscoda; Keweenaw Co.,—Farwell; Black River,—B. & K. Common.

1257. var. **androcladum**, Engelm.

Ann Arbor,—Allmendinger Cat.; Flint,—Dr. Clark; Macomb Co.

1258. var. **angustifolium**, Engelm.

Isle Royale,—Whitney Cat.; Keweenaw Co.,—F.; N. shore of Lake Superior,—Agassiz.

1259. **S. minimum**, Fries.

Hubbardston; Manistee,—E. J. Hill; Macomb Co.; Homestead, Benzie Co.; Keweenaw Co.,—Farwell. Rare.

CII. ARACEÆ. Arum Family.

447. ARISÆMA, Martius. Indian Turnip. Dragon Arum.

*1260. **A. triphyllum**, Torr. Indian Turnip. Th.

Rich woods.

*1261. **A. Dracontium**, Schott. Green Dragon. Dragon-root. C. & S.

Low grounds. Infrequent.

448. PELTANDRA, Raf. Arrow Arum.

*1262. **P. undulata**, Raf. C. & S.

S. Mich.,—Wright Cat.; Huron River,—Allmendinger Cat.; Ionia Co.; Flint.

449. CALLA, L. Water Arum.

*1263. **C. palustris**, L. Th.

Bogs. Frequent.

450. SYMPLOCARPUS, Salisb. Skunk Cabbage.

*1264. **S. fœtidus**, Salisb. Th.

451. ACORUS, L. Sweet Flag. Calamus.

*1265. **A. Calamus**, L. Th.

Margin of streams. Infrequent.

CIII. LEMNACEÆ. Duckweed Family.

452. SPIRODELA, Schleiden.

*1266. **S. polyrrhiza**, Schleid.

Ponds. Common.

453. LEMNA, L. Duckweed. Duck's-meat.

*1267. **L. trisulca**, L. C. & S.

Ponds. Frequent.

1268. **L. perpusilla**, Torr. C. & S.

Detroit River,—D. H. Campbell; Dr. A. B. Lyons. Rare.

*1269. **L. minor**, L. Th.

Ponds. Blossems occasionally in June. Common.

454. WOLFFIA, Horkel.

1270. **W. Columbiana**, Karsten.

Abundant on Maple River, Clinton Co.; Ionia Co.; Detroit,—J. M. Bigelow.

1271. **W. Brasiliensis**, Weddell.

With the last. Nearly covering the surface of ponds and slow streams in July.

CIV. ALISMACEÆ. WATER-PLANTAIN FAMILY.

455. ALISMA, L. WATER-PLANTAIN.

*1272. **A. Plantago, L.** Th.

Shallow water. Common.

456. SAGITTARIA, L. ARROW-HEAD.

*1273. **S. variabilis,** Engelm. Th.

Wet places. Occurs in many forms, the most marked of which are the following:

*1274. var. **obtusa,** Engelm.

*1275. var. **latifolia,** Engelm.

*1276. var. **angustifolia,** Engelm.

*1277. **S. heterophylla,** Pursh. Th.

Elk Rapids,—Winch. Cat.; Detroit,—D. H.Campbell; Alma,—Chas. A. Davis.

1278. var. **rigida,** Engelm.

Fruitport,—E. J. Hill, and in the Great Lakes.

*1279. **S. graminea,** Michx. S.

Dr. A. B. Lyons; Park Lake, Clinton Co.,—Bailey.

457. ECHINODORUS, Richard.

1280. **E. parvulus,** Engelm.

Dr. A. B. Lyons; Gray's Manual, 6th edition.

CV. NAIADACEÆ. PONDWEED FAMILY.

458. TRIGLOCHIN, L. ARROW-GRASS.

1281. **T. palustre,** L. Th.

Marshes. Frequent.

1282. **T. maritima,** L.

Shores of Great Lakes; borders of deer licks in interior; Macomb Co.; S. Mich.,—Wright Cat.; Hubbardston; Petoskey.

459. SCHEUCHZERIA, L.

1283. **S. palustris,** L.

Keweenaw Co.,—Farwell; S. W.,—Wright Cat.; Macomb Co.,—Cooley; Hubbardston; Montcalm Co. Infrequent.

460. POTAMOGETON, Tourn. PONDWEED.

*1284. **P. natans,** L. Th.

Ponds. Frequent.

*1285. var. **prolixus,** Koch.

Common in deep water of lakes and rivers.

1286. **P. Pennsylvanicus,** Cham. Th.

Ionia Co.; Macomb Co.,—Dr. D. Cooley; Fruitport,—E. J. Hill; Keweenaw Co.,—F.

1287. **P. lateralis,** Morong.

Bear Lake, Van Buren Co.,—E. J. Hill. Rare.

1288. **P. Spirillus,** Tuckerman. U. P.

"Lake Superior,"—Gray's Manual; Keweenaw Co.,—F.

1289. **P. hybridus,** Michx.

Dr. A. B. Lyons.

1290. **P. rufescens,** Schrader. N. & U. P.

Mud Lake and Bear River; Petoskey, E. J. Hill; Keweenaw Co.,—F.

*1291. **P. fluitans,** Roth. L. P.

Hubbardston; Macomb Co.; Detroit River,—D. H. Campbell; Portage Lake, Crawford Co. Infrequent.

*1292. **P. amplifolius,** Tuckerman. Th.

Maple River; Macomb Co.; Pere Marquette River at Ludington,—E. J. Hill.

*1293. **P. heterophyllus,** Schreb. Th.

Woodward Lake, Ionia Co.; Flint; Macomb Co.; and northward.

1294. var. **graminifolius** (Fries).

Bear Lake, Van Buren Co.,—E. J. Hill; Black Lake, Cheboygan Co.,—B. & K.

*1295. **P. Zizii,** Mert. & Koch.

Crystal Lake, near Frankfort, and Bear Lake, Manistee Co.,—E. J. Hill; Crystal Lake, Montcalm Co., and Woodward Lake, Ionia Co.; Detroit River,—D. H. Campbell. Infrequent.

*1296. **P. lucens,** L. Th.

Muskegon River, near Houghton Lake; Flint; S. Mich.,—Wright. Cat; Detroit River,—D. H. Campbell; Lake Superior,—Agassiz.

*1297. **P. prælongus,** Wulfen. Th.

Maple River; Pine Lake, Ingham Co.; Black Lake, Cheboygan Co. Common.

*1298. **P. perfoliatus,** L. Th.

Pine Lake, Ingham Co. and northward. Common.

1299. var. **lanceolatus,** Robbins. Th.

Little Traverse Bay, etc.; "Along the Great Lakes,"—Gray.

*1300. **P. zosteræfolius,** Schum. Th.

Common.

1301. **P. Hillii,** Morong.

Marquette Co.,—E. J. Hill.

1302. **P. obtusifolius,** Mertens & Koch.

"Floating in Gratiot Lake, N. Mich.,"—Gray's Manual.

*1303. **P. pauciflorus,** Pursh. Th.

Hubbardston; Grand Rapids; Flint; Macomb Co., and northward. Typical forms occur at Manistee and Frankfort,—E. J. Hill.

1304. var. **Niagarensis,** Gray.

In running water, Hubbardston; Macomb Co., and along the Great Lakes.

1305. **P. pusillus,** L.

Manistee Lake,—E. J. Hill; Detroit River,—D. H. Campbell.

*1306. **P. mucronatus,** Schrad.

Crooked River, Cheboygan Co., and common at Manistee and Frankfort,—E. J. Hill; Oscoda; St. Mary's River; Sault de Ste. Marie.

*1307. **P. pectinatus,** L. Th.

Frequent.

1308. **P. marinus,** L.

Crystal Lake, near Frankfort, Benzie Co.,—E. J. Hill.

*1309. **P. Robbinsii,** Oakes.

N. shore Lake Superior; Pine lake, seven miles N. E. of the Agricultural College, 1891, the only station known in the L. P.,—C. F. Wheeler.

461. ZANNICHELLIA, Micheli. Horned Pondweed.

1310. **Z. palustris**, L.

Dr. A. B. Lyons; W. Bay City. Rare.

462. NAIAS, L.

1311. **N. marina**, L. Naiad.

Flint,—Dr. D. Clark.

*1312. **N. flexilis**, Rostk. & Schmidt. Th.

Ponds. Frequent.

*1313. var. **robusta**, Morong.

South Haven; Park lake, Clinton Co.,—Bailey.

CVI. ERIOCAULEÆ. Pipewort Family.

463. ERIOCAULON, L.

1314. **E. septangulare**, With. Th.

Margin of Long lake, Cheboygan Co.,—B. & K.; S. W.,—Wright Cat.; Macomb Co.,—Cooley; Escanaba,—E. J. Hill. Infrequent.

CVII. CYPERACEÆ. Sedge Family.

464. CYPERUS, Tourn. Galingale.

1315. **C. flavescens**, L. S.

Grand Rapids,—Coleman Cat.; S. Mich.,—Wright Cat. Rare.

*1316. **C. diandrus**, Torr. C. & S.

Low grounds. Common.

*1317. var. **castaneus**, Torr.

Frequent.

*1318. **C. aristatus**, Rottb.

Grand Rapids,—Coleman; Ionia; banks of Cedar river, Agricultural College grounds. Not common

1319. **C. Schweinitzii**, Torr. S. W.

Lake Michigan shore at S. Haven,—Bailey; Kalamazoo,—Tuthill.

1320. **C. Houghtonii**, Torr.

Hilltops near Indian River,—Wheeler; Long Lake, Cheboygan Co.,—B. & K.

*1321. **C. filiculmis**, Vahl. C. & S.

Sterile soil. Common.

*1322. **C. erythrorhizos**, Muhl. S.

Macomb Co.,—Dr. D. Cooley; near Agricultural College. Infrequent.

*1323. **C. esculentus**, L. L. P.

A troublesome weed on low grounds, spreading rapidly by means of its nut-like tubers. Hard to eradicate. Muir; Flint; Grand Rapids; north to Oscoda, Frequent.

*1324. **C. strigosus**, L. C. & S.

Low grounds. Common.

1325. **C. speciosus**, Vahl.

Low grounds. Hubbardston; Flint, etc.

*1326. **C. Engelmanni**, Steud.

Fruitport,—E. J. Hill; shore of Park Lake, Clinton Co.,—C. F. Wheeler. Rare.

465. KYLLINGA, Rott.

1327. **K. pumila, Michx.** S.

Dr. Lyons.

466. DULICHIUM, Pers.

*1328. **D. spathaceum, Pers.** Th.

Borders of swamps and ponds. Common.

467. ELEOCHARIS, R. Br. SPIKE-RUSH.

*1329. **E. Robbinsii, Oakes.**

Shallow water. Park Lake, Clinton Co. The only station known in the State,—C. F. Wheeler.

1330. **E. equisetoides, Torr.**

Wright Cat., Jackson Co., 1888.

*1331. **E. quadrangulata, R. Br.** C. & S.

S. Mich.,—Gray; Flint; borders of Crystal Lake, Montcalm Co; shores of Park Lake and Pine Lake Infrequent.

*1332. **E. ovata, R. Br.** Th.

Wet grounds. N. shore of L. Superior,—Agassiz; southward. Infrequent.

*1333. **E. olivacea, Torr.**

Shore of Park Lake, Clinton Co.,—Wheeler. Only station known in the State.

*1334. **E. palustris, R. Br.** Th.

Wet places. Common.

*1335. var. **glaucescens, Gray.**

Frequent.

1336. var. **calva, Gray.**

Lake Antoine,—E. J. Hill.

*1337. var. **vigens, L. H. Bailey.**

Indian river, Cheboygan Co.; along the Great Lakes,—Gray's Man.

1338. **E. rostellata, Torr.**

Marshes. Hubbardston; Macomb Co.; Drummond's I.,—Winch. Cat. Rare.

*1339. **E. intermedia, Schultes.** L. P.

Macomb Co.,—Dr. D. Cooley; Grand Traverse Bay,—Winch. Cat.; Hubbardston. Low river banks.

1340. **E. tenuis, Schultes.** Th.

Oscoda; east coast of L. Superior,—Canadian Cat.; Keweenaw Co.,—F.

*1341. **E. acicularis, R. Br.** Spike-rush. Th.

1342. **E. pygmæa, Torr.**

Salt marshes Hubbardston; Clinton Co.,—E. F. Smith.

468. FIMBRISTYLIS, Vahl.

*1343. **F. autumnalis, R. & S.**

S. Mich.,—Wright; Pine lake, Ingham Co.

1344. **F. capillaris, Gray.**

S. Mich.,—Wright; Detroit. Rare.

[E. COMPRESSA, Sullivant.

Lake Superior at Thunder Bay,—Canadian Catalogue. May be looked for within our limits.]

[E. PAUCIFLORA, Link.

North shore of Lake Superior,—Canadian Cat. Probably to be found within the State.]

469. SCIRPUS, Tourn. Bulrush or Club-Rush.

1345. **S. cæspitosus, L.** U. P.
Dr. A. B. Lyons; Marquette,—E. J. Hill; north shore of Lake Superior.—Agassiz.

* 1346. **S. Clintonii, Gray.** C.
Bluffs along Fish creek, Hubbardston; Bath,—L. H. Bailey. Rare.

* 1347. **S. subterminalis, Torr.** Th.
Houghton Lake; Woodward Lake, Ionia Co.; Flint; Macomb Co.; S. Mich.,—Wr. Cat.; north of Lake Superior.—Can. Cat. Infrequent.

* 1348. **S. pungens, Vahl.** Th.
Borders of ponds. Common.

* 1349. **S. Torreyi, Olney.**
Border of Pine Lake, Ingham Co.,—Bailey.

1350. **S. Olneyi, Gray.**
Border of deer lick near Hubbardston,—Wheeler.

* 1351. **S. lacustris, L.** Th.
In still water. Common.

* 1352. **S. debilis, Pursh.**
Macomb Co.,—Cooley; Park Lake, Clinton Co.,—Wheeler. Rare.

* 1353. **S. Smithii, Gray.**
Shore of Park Lake,—C. F. Wheeler, 1891. Only locality known in the State.

1354. **S. maritimus, L.** Sea Club-Rush. S.
S. Mich.,—Wright Cat.

1355. **S. fluviatilis, Gray.** River Club-Rush. Th.
Margins of rivers, S. Mich.,—Winch. Cat.; Macomb Co.; Hubbardston; abundant along Maple River; west of Lake Superior,—Macoun.

1356. **S. sylvaticus, L., var. digynus, Boeckl.**
Lake Nipigon, Ont.,—Macoun; Keweenaw Co.,—F.

* 1357. **S. atrovirens, Muhl.** Th.
Wet meadows. Common.

1358. **S. polyphyllus, Vahl.**
S. Mich.,—Wright Cat.

470. ERIOPHORUM, L. Cotton-Grass.

* 1359. **E. lineatum, Benth. & Hook.**
River banks, S. Mich.,—Winch. Cat.; Flint; Macomb Co.; Hubbardston. Infrequent.

* 1360. **E. cyperinum, L.**
Wet meadows. Common and variable.

1361. **E. alpinum, L.** Th.
Mud Lake; Petoskey,—E. J. Hill; Macomb Co.,—Cooley. Infrequent.

* 1362. **E. vaginatum, L.** Th.
Sphagnous swamps. S. Mich.,—Winch. Cat.; Macomb Co.; Hubbardston, and northward. Rare.

* 1363. **E. Virginicum, L.** Th.
Sphagnous swamps. Ann Arbor,—Allmend. Cat.; Flint; Hubbardston; northward. Infrequent.

* 1364. **E. polystachyon, L.** Th.
Swamps. Common.

1365. var. **latifolium, Gray.**
Cassopolis,—Wheeler.

1366. **E. gracile,** Koch. Th.

S. Mich.,—Wright Cat.; Flint; Hubbardston; Montcalm Co.; and northward; Kalamazoo,—Tuthill. Rare.

471. FUIRENA, Rottb. Umbrella-Grass.

1367. **F. squarrosa,** Michx., var. **pumila,** Torr. C.

Macomb Co.,—Dr. D. Cooley. Rare.

472. HEMICARPHA, Nees.

*1368. **H. subsquarrosa,** Nees. C. & S.

S. W.,—Wright Cat.; Pine lake, Ingham Co. Rare.

473. RHYNCHOSPORA, Vahl. Beak-Rush.

1369. **R. fusca,** R. & S.

Escanaba,—E. J. Hill.

1370. **R. alba,** Vahl. Th.

Bogs. Ann Arbor,—Allmend. Cat.; Macomb Co.; Hubbardston; N. E.,—Winch. Cat.; Keweenaw Co.,—F.; Mackinaw City,—Wheeler.

1371. **R. capillacea,** Torr. Th.

Bogs and sandy lake shores. Hubbardston; Flint; Macomb Co.; Petoskey. Infrequent.

1372. var. **leviseta,** Hill.

Shore Grand Traverse Bay, near Torch lake,—E. J. Hill.

*1373. **R. glomerata,** Vahl.

S. Mich.,—Wright Cat.; Macomb Co., Hubbardston; Pine lake, Ingham Co.

474. CLADIUM, P. Browne. Twig-Rush.

*1374. **C. mariscoides,** Torr. L. P.

Bogs. S. Mich.,—Wright Cat.; Macomb Co.; Flint; Hubbardston; Cheboygan Co.,—B. & K.

475. SCLERIA, Berg. Nut-Rush.

1375. **S. triglomerata,** Michx. S.

S. Mich.,—Wright Cat.; Macomb Co.; Flint. Rare.

1376. **S. verticillata,** Muhl. S.

Macomb Co.,—Dr. D. Cooley. Rare.

476. CAREX, Ruppius. Sedge.

*1377. **C. pauciflora,** Lightfoot.

U. P.,—Dr. A. B. Lyons; Chocolate R., L. Superior,—Henry Gillman; Towar's swamp near Agricultural College. Local.

1378. **C. Michauxiana,** Boeckl. U. P.

Keweenaw Co.,—F.; near Portage river,—Porter.

1379. **C. folliculata,** L. Th.

S. Mich.,—Wright Cat.; So. Haven; Flint; Macomb Co., to L. Superior. Rare.

*1380. **C. intumescens,** Rudge. Th.

Swamps. So. Haven and northward. Common.

*1381. **C. Grayii,** Carey.

Low grounds. Macomb Co.; Flint; Hubbardston; Lenawee Co. Rare.

*1382. **C. lupulina,** Muhl. Th.

Low grounds. Common.

*1383. var. **pedunculata,** Dew.

"With the species, but more common," Prof. Bailey in Gray's Man., 6th ed. Frequent at Lansing.

*1384. **C.** LUPULINA×RETRORSA, Dudley.

Lansing,—Bailey.

1385. **C. oligosperma,** Michx. Th.

Borders of swamps and lakes. Hubbardston; Woodward Lake; Farwell; Houghton Lake; Crawford Co.; Keweenaw Co., F.

*1386. **C. utriculata,** Boott. Th.

Swamps. Common.

*1387. var. **minor,** Boott.

With the species.

*1388. **C. monile,** Tuckerman. Th.

Mud Lake, Petoskey,—E. J. Hill; Keweenaw Co.,—F.; Colon,—Wheeler; Reform School marsh, Lansing.

*1389. **C. Tuckermani,** Dewey.

Swamps. S. Mich.,—Wright Cat.; Hubbardston; Flint; Macomb Co., and northward. Frequent.

*1390. **C. retrorsa,** Schwein. Th.

River banks. Frequent.

*1391. var. **Hartii,** Gray.

Hubbardston; Agricultural College Farm.

1392. **C. lurida,** Wahl. Th.

Antrim Co.; S. Mich.,—Wright Cat.; So. Haven; Hubbardston; Keweenaw Co.,—F.

1393. **C. Schweinitzii,** Dew.

Near Frazer's, Crawford Co.,—Prof. L. H. Bailey. Only station known in the State.

*1394. **C. hystricina,** Muhl. Th.

Wet meadows. Common.

1395. var. **Dudleyi,** Bailey.

Owosso,—G. H. Hicks. The only locality known in the State.

1396. **C. Pseudo-Cyperus,** L. Th.

Margins of streams. S. Mich.;—Wright Cat.; Macomb Co.; Hubbardston; northward. Infrequent.

*1397. var. **Americana,** Hochst.

Wet places, Common in the center and south.

*1398. **C. squarrosa,** L.

S. Mich.,—Wright Cat.; Hubbardston; Lansing,—Bailey; Keweenaw Co.,—F. Rare.

*1399. **C. scabrata,** Schwein.

Banks of steams. Flint; Grand Rapids,—Coleman Cat.; Hubbardston to Lake Superior,—Whitney Cat. Infrequent.

1400. **C. Houghtonii,** Torr. N. & U. P.

N. part of Clare Co.; Keweenaw Co.; Cheboygan Co.; Oscoda; northward.

*1401. **C. filiformis,** L. Th.

Bogs. S. Mich.,—Wright Cat.; Hubbardston; Macomb Co.; Flint; common at Pine Lake, Ingham Co.; Keweenaw Co.,—F.; Towar's swamp, Lansing.

*1402. var. **latifolia,** Boeckl.

River banks, S. E.,—Winch. Cat.; Macomb Co.; Flint; Hubbardston; northward. Frequent.

*1403. **C. trichocarpa,** Muhl. C. & S.

S. Mich.,—Wright Cat.; Macomb Co. Infrequent.

*1404. var. **aristata,** Bailey.

Agricultural College grounds; northward to Lake Superior.

*1405. **C. riparia,** W. Curtis. Th.

Wet places. Common.

1406. **C. alpina,** Swartz. U. P.

Isle Royale,—Whitney Cat.

*1407. **C. fusca,** All. Th.

Bogs. S. E.,—Winch. Cat.; Macomb Co.; Hubbardston; northward to L. Superior,—Whitney Cat. Infrequent.

*1408. **C. stricta,** Lam. Th.

Low grounds. Common.

1409. var. **angustata,** Bailey.

Less common than the species. Hubbardston,—Wheeler; Keweenaw,—F.

1410. **C.** STRICTA×FILIFORMIS, Bailey.

Keweenaw Co.,—F.

*1411. **C. aquatilis,** Wahl. Th.

Margins of streams. S. Mich.,—Wright Cat.; Flint; Macomb Co.; Hubbardston; Sitting Rabbit,—Winch. Cat. Infrequent.

1412. **C. lenticularis,** Michx. U. P.

"Upper Michigan,"—Gray; Laughing Fish R., L. Superior,—Henry Gillman.

1413. **C. prasina,** Wahl. S.

Wet meadows. Hubbardston; S. Mich.,—Winch. Cat.; Flint; Port Huron,—C. K. Dodge. Rare.

*1414. **C. crinita,** Lam. Th.

Low grounds. Common.

*1415. **C. Magellanica,** Lam. Th.

Sphagnous swamps. Local.

*1416. **C. limosa,** L. Th.

Bogs. Ann Arbor,—Allmend. Cat.; Macomb Co.; Hubbardston and northward. Infrequent.

1417. **C. virescens,** Muhl., var. **costata,** Dew. Th.

S. Mich.,—Winch. Cat.; Detroit; Constantine, Dundee,—Wheeler; So. Haven; Keweenaw Co.,—F.

1418. **C. triceps,** Michx., var. **hirsuta,** Bailey.

In an oak wood on the farm of Hon. N. B. Hayes, in North Plains township, Ionia Co. Not known to occur elsewhere in the State.

*1419. **C. longirostris,** Torr.

Woods. Flint; Hubbardston and northward. Rare.

1420. **C. castanea,** Wahl. Th.

Woods. Montcalm Co.; Macomb Co.; L. Superior,—Whitney Cat.; Alcona Co.; Port Huron,—Dodge, Keweenaw Co.,—F.

1421. **C.** ARCTATA×CASTANEA, Bailey.

Keweenaw Co.,—F.

1422. **C. capillaris,** L. N. & U. P.

Point de Tour, Lake Michigan,—Gray; Sturgeon Point, Alcona Co.; Mackinac,—G. H. Hicks. Common in the Lake Superior region.

*1423. **C. arctata,** Boott. Th.

Woods. S. Mich.,—Winch. Cat.; Petoskey; near South Haven; Hubbardston; Grand Ledge; Van Buren Co.,—Bailey.

1424. var. **Faxoni,** Bailey.

Isle Royale,—Dr. Sandberg; Keweenaw Co.,—F.

1425. **C. debilis,** Michx., var. **Rudgei,** Bailey.

Bear lake, Van Buren Co.,—E. J. Hill; shores of Barron lake, Cass Co.; Gaylord; Alcona Co.

*1426. **C. gracillima,** Schwein. Th.

Wet meadows.

*1427. var. **humilis,** Bailey.

Keweenaw Co.,—Farwell.

*1428. **C. formosa,** Dewey.

Macomb Co. Rare.

*1429. **C. Davisii,** Schwein. & Torr.
Keweenaw Co.,—Farwell. Rare.

*1430. **C. grisea,** Wahl. Th.
Moist woods. Variable.

*1431. **C. granularis,** Muhl. Th.
Low grounds. Common.

1432. **C. Crawei,** Dewey.
Macomb Co.,—Cooley; Keweenaw Co.,—F. Rare.

1433. **C. flava,** L. Th.
Sphagnous swamps. Frequent.

1434. var. **graminis,** Bailey.
Crawford Co.,—Bailey; Keweenaw Co.,—F. Rare.

1435. var. **viridula,** Bailey. Th.
Margins of lakes. Frequent.

1436. **C. pallescens,** L.
Dr. A. B. Lyons; Keweenaw Co.,—F.; Sault de Ste. Marie,—Macoun.

1437. **C. conoidea,** Schk. C. & S.
S. E.,—Wright Cat.; Flint. Infrequent.

1438. **C. oligocarpa,** Schk.
Flint; Macomb Co.,—Dr. D. Cooley; Cassopolis,—Wheeler; Detroit,—Dr. Lyons.

*1439. **C. Hitchcockiana,** Dewey. S.
Woods. Flint; Hubbardston and southward.

*1440. **C. laxiflora,** Lam. Th.
Beech and maple woods. Exceedingly variable. Common.

*1441. var. **varians,** Bailey. Th.
Keweenaw Co.,—F.; southward. Common.

*1442. var. **striatula,** Carey. S.
Common.

*1443. var. **latifolia,** Boott. S.
Frequent.

*1444. var. **patulifolia,** Carey.
Frequent in center and south.

*1445. **C. digitalis,** Willd. S.
Macomb Co.; Flint; Hubbardston. Frequent.

*1446. var. **copulata,** Bailey.
Hubbardston; southward.

1447. **C. laxiculmis,** Schwein.
Washington, Macomb Co.,—Dr. Cooley. Rare.

*1448. **C. platyphylla,** Carey. S.
Grand Rapids,—Coleman's Cat.; Hubbardston. Infrequent.

*1449. **C. Careyana,** Torr. S.
Rich woods. Macomb Co.; Flint; Hubbardston; southward. Rare.

*1450. **C. plantaginea,** Lam. Th.
Hillsides. Scarce.

1451. **C. Saltuensis,** Bailey. N. & U. P.
Keweenaw Co.,—F; Oscoda Co.,—L. H. Bailey,

*1452. **C. tetanica,** Schkuhr.

S. Mich.;—Winch. Cat.; Grand Ledge,—C. F. Wheeler; near Pine Lake, Ingham Co.,—L. H. Bailey; Macomb Co.; Flint, and northward.

*1453. var. **Woodii,** Bailey.

Central part of the State. Infrequent.

*1454. var. **Meadii,** Bailey.

Sphagnous swamps. Macomb Co.; Hubbardston; Constantine. Infrequent.

1455. **C. livida,** Willd. U. P.

Lake Superior,—Gray's Manual. Rare.

*1456. **C. aurea,** Nutt. Th.

Borders of cool springs. S. E.,—Wright Cat; Ann Arbor,—Allmend. Cat.; Macomb Co.; Pine Lake, Ingham Co.; Hubbardston; Petoskey and northward. Infrequent.

1457. **C. eburnea,** Boott. Th.

Hillsdale; So. Haven on sand dunes and northward. Infrequent.

1458. **C. Richardsonii,** R. Br.

Barrens. Ionia Co.; Macomb Co.; Gaylord,—G. E. Hancorne. Scarce.

*1459. **C. pedunculata,** Muhl. Th.

Hillsides. Infrequent.

1460. **C. scirpoidea,** Michx.

N. E.,—Winch. Cat.; Drummond's Island; Keweenaw Co.,—F.

1461. **C. deflexa,** Hornem.

Keweenaw Co.,—F.

1462. var. **Deanei,** Bailey.

Keweenaw Co.,—F. Mackinac.—G. H. Hicks.

1463. var. **meadia,** Bailey.

Keweenaw Co.,—F.

1464. **C. varia,** Muhl.

Barron Lake; New Buffalo; Monroe Co.; dunes, So. Haven,—Bailey; Oscoda Co.; Crawford Co.; Grand Traverse,—Winch. Cat.; Keweenaw Co.,—F.

*1465. **C. Pennsylvanica,** Lam. Th.

Dry woods. Our commonest sedge.

*1466. **C. communis,** Bailey. Th.

With the last. Frequent.

*1467. var. **Wheeleri,** Bailey.

Hubbardston; Grand Ledge; Alcona Co.; Mackinac,—G. H. Hicks; Keweenaw Co.,—F. Infrequent.

*1468. **C. umbellata,** Schk.

Grand Ledge,—Wheeler; Keweenaw Co.,—F. Rare.

1469. var. **vicina,** Dewey.

Alcona Co.; Keweenaw Co.,—F. Not common.

*1470. **C. pubescens,** Muhl. Th.

S. Mich.,—Wright Cat.; Macomb Co.; Hubbardston to Lake Superior,—Whitney Cat. Frequent.

*1471. **C. Jamesii,** Schwein. Th.

Keweenaw Co.,—F.; Cassopolis; Dundee. Infrequent.

1472. **C. Willdenovii,** Schk.

Bear Lake, Van Buren Co.,—E. J. Hill. Rare.

1473. **C. Backii,** Boott. N. & U. P.

Ontonagon River,—Whitney Cat.; West Harrisville, Alcona Co. Rare.

*1474. **C. polytrichoides,** Muhl. Th.

Low grounds. Common.

*1475. **C. chordorhiza,** Ehrh. Th.

Upland swamps. Macomb Co.; Hubbardston. Rare.

*1476. **C. stipata,** Muhl. Th.

Low grounds. Common.

*1477. **C. crus-corvi,** Shuttlew.

Valley of River Raisin near Dundee; Reform school marsh, Lansing,—C. F. Wheeler. The only localities known in the State.

*1478. **C. decomposita,** Muhl.

Hubbardston; Ann Arbor,—Allmendinger Cat.; S. Mich.,—Wright Cat.; Lansing,—Bailey. Very rare.

*1479. **C. teretiuscula,** Good. Th.

Swamps. Common.

*1480. var. **ramosa,** Boott.

Frequent.

*1481. **C. alopecoidea,** Tuckerman.

Macomb Co.; Gray's Man.; Agricultural College grounds.

1482. var. **sparsispicata,** Dewey.

Flint,—Clark; Macomb Co.,—Cooley.

*1483. **C. vulpinoidea,** Michx. Th.

Low meadows. Common.

*1484. **C. Sartwellii,** Dewey. Th.

S. Mich.,—Winch. Cat.; Macomb Co.; Flint; Hubbardston and northward.

*1485. **C. tenella,** Schk.

Sphagnous swamps. Common.

*1486. **C. rosea,** Schk. S.

Moist woods. Frequent.

*1487. var **radiata,** Dewey. Th.

Dry woods. Frequent.

1488. var. **retroflexa,** Torr. S.

Infrequent.

*1489. **C. sparganioides,** Muhl. C. & S.

Low, rich grounds. Infrequent.

*1490. **C. Muhlenbergii,** Schk. C. & S.

Fields. Hubbardston; Macomb Co.; southward. Infrequent

*1491. **C. cephaloidea,** Dewey. C. & S.

Fields. Macomb Co.,—Cooley; Ann Arbor,—Allmend. Cat. Rare.

*1492. **C. cephalophora,** Muhl. C. & S.

Open woods. Common.

1493. **C. gynocrates,** Wormskiold.

N. E. and N. W.,—Winch. Cat.; Sturgeon Point, Alcona Co.; Mio, Oscoda Co.

1494. **C. exilis,** Dewey.

Keweenaw Peninsula,—F. The only station known in the State for this rare E. species.

1495. **C. echinata,** Murr., var. **cephalantha,** Bailey.

Keweenaw Co.,—F.

*1496. var. **microstachys**, Boeckl.

S. Mich.,—Winch. Cat.; Hubbardston; Flint; Macomb Co.; and northward. Common.

*1497. **C. canescens**, L. Th.

In swamps.

*1498. var. **vulgaris**, Bailey. Th.

Common.

1499. var. **alpicola**, Wahl.

Keweenaw Co.,—F.

1500. var. **polystachya**, Boott.

Keweenaw Co.,—F.

*1501. **C. tenuiflora**, Wahl. Th.

U. P.,—Whitney Cat.; Oscoda Co.; Towar's swamp, near Lansing,—Wheeler, 1890.

*1502. **C. trisperma**, Dewey. Th.

Upland swamps. Constantine; Hubbardston; Flint; Macomb Co. Frequent.

*1503. **C. Deweyana**, Schwein. Th.

Woods. Frequent.

*1504. **C. bromoides**, Schk. Th.

Low grounds. Common.

*1505. **C. siccata**, Dewey.

Barrens. Macomb Co.; Flint; Hubbardston; near Park Lake; northward to Lake Superior. Infrequent.

*1506. **C. Muskingumensis**, Schwein. C. & S.

Hubbardston; Flint; near Owosso,—Hicks. Rare.

*1507. **C. tribuloides**, Wahl. Th.

Swales. Frequent.

*1508. var. **turbata**, Bailey.

Hubbardston,—Wheeler. Rare.

1509. var. **reducta**, Bailey.

Keweenaw Co.,—F.

*1510. var. **Bebbii**, Bailey. Th.

Frequent.

*1511. var. **cristata**, Bailey. Th.

Common in swales.

*1512. **C. scoparia**, Schk. Th.

Low grounds, everywhere.

1513. var. **minor**, Boott.

Keweenaw Co.,—F.

1514. **C. adusta**, Boott.

Crawford Co.,—Bailey; Grayling.—G. H. Hicks. Rare.

1515. **C. fœnea**, Willd.

Alger's Camp, Alcona Co.; Potts; Oscoda Co.; Crawford Co.; Isle Royale,—Dr. J. H. Sandberg.

*1516. **C. straminea**, Willd. Th.

Ann Arbor,—Allmendinger Cat.; Macomb Co.; Flint; Hubbardston; So. Haven; northward to Keweenaw Co.,—F. Frequent.

*1517. var. **mirabilis**, Tuck. Th.

Hubbardston, and northward. Infrequent.

*1518. var. **brevior,** Dewey. Th.

Common.

*1519. var. **alata,** Bailey.

Keweenaw Co.,—F.; Crystal Lake, Montcalm Co.,—Wheeler; So. Haven; Niles,—Dr. G. L. Ames, in University Herb.

1520. **C. sychnocephala,** Carey.

Crystal, Montcalm Co. Only station known in the State. Coll. by C. F. Wheeler, Sept. 11, 1875.

CVIII. GRAMINEÆ. Grass Family.

477. SPARTINA, Schreb. Cord or Marsh Grass.

*1521. **S. cynosuroides,** Willd. Fresh-water Cord-Grass. Th.

Banks of rivers, to N. shore L. Superior,—Agassiz. Frequent.

478. PANICUM, L. Panic-Grass.

*1522. **P.** glabrum, Gaudin.

Waste places. Common.

*1523. **P.** sanguinale, L. Common Crab- or Finger-Grass.

Waste places, gardens, and fields. A bad weed, difficult to dig up or pull out; grows quickly and is perhaps the worst weed we have in gardens, at least in some localities. *P. glabrum* grows in the same situations but is smaller and easily eradicated.

*1524. **P. capillare,** L. Old-witch Grass. Th.

Sandy soil, fields. The spreading panicle is easily broken off and blown about by the wind. Common.

1525. **P. agrostoides,** Muhl.

Specimen in the College Herb., collected by Dr. D. Cooley, at Washington, Macomb Co. Only locality known in the State.

*1526. **P. virgatum,** L. Th.

S. Mich.,—Wright Cat.; Ionia; Flint. A tall coarse grass along rivers. Infrequent.

1527. **P. xanthophysum,** Gray. N. & U. P.

Grand Traverse Co., Indian River and Black Lake, Cheboygan Co.,—C. F. Wheeler; northward to Keweenaw Co.,—F.

*1528. **P. latifolium,** L. L. P.

Rich woods. Northward to Oscoda Co. Common.

*1529. **P. clandestinum,** L.

Low grounds. Macomb Co.; Flint; Hubbardston. Rare.

*1530. **P. scoparium,** Lam. Th.

Hubbardston. Along the R. R. between St. Johns and Muir, northward to Baldwin. Frequent in light sandy soil.

1531. **P. nitidum,** Michx. (Lam. ?).

Washington, Macomb Co.,—Dr. Cooley; Keweenaw Co.,—F.

1532. **P. microcarpon,** Muhl.

Washington, Macomb Co.,—Dr. Cooley.

*1533. **P. depauperatum,** Muhl. Th.

Dry woods and barrens. Common.

*1534. **P. dichotomum,** L. Th.

Dry or low grounds. A very common and exceedingly variable grass. Some forms seem distinct enough to be considered species. The most common forms are:

*1535. var. **commune,** Wats.

*1536. var. **fasciculatum,** Wats.

*1537. var. **gracile,** Wats.

*1538. **P.** CRUS-GALLI, L. Barnyard-Grass.

Low grounds. Variable. Common.

*1539. var. **hispidum,** Gray.

Low river bank near Hubbardston where it appears to be indigenous.

479. SETARIA, Beauv. BRISTLY FOXTAIL GRASS.

*1540. **S.** VERTICILLATA, Beauv.

College grounds.

*1541. **S.** GLAUCA, Beauv. Foxtail. Pigeon-Grass.

Fields and gardens. Common.

*1542. **S.** VIRIDIS, Beauv. Green Foxtail. Bottle-Grass.

Cultivated grounds. Common.

*1543. **S.** ITALICA, Kunth. Millet. Hungarian Grass.

Persisting after cultivation in places.

480. CENCHRUS, L. HEDGEHOG- OR BUR-GRASS.

*1544. **C. tribuloides,** L.

This bad weed has begun to occupy the S. part of the State, as far north as Bay City. Not as yet troublesome in fields, but likely to become so on sandy farms along the Great Lakes.

481. LEERSIA, Swartz. WHITE GRASS.

*1545. **L. Virginica,** Willd. Th.

Wet woods. Northward to Keweenaw Co.,—F, Frequent.

*1546. **L. oryzoides,** Swartz. Rice Cut-grass. Th.

River banks. Frequent.

482. ZIZANIA, Gronov. WATER OR INDIAN RICE.

*1547. **Z. aquatica,** L. Indian Rice. Water Oats. Th.

Borders of large streams and lakes. Yields an edible grain, gathered by the Indians, and greedily eaten by wild ducks which haunt lakes and rivers during its ripening in innumerable numbers.

483. ANDROPOGON, Royen. BEARD-GRASS.

*1548. **A. furcatus,** Muhl. Th.

Light soil. Common.

*1549. **A. scoparius,** Michx. L. P.

Sterile soil. Frequent.

484. CRYSOPOGON, Trln.

*1550. **C. nutans,** Benth. Indian Grass. Wood-Grass. C. & S.

Dry banks and sandy fields. Variable. Infrequent.

485. PHALARIS, L. CANARY-GRASS.

1551. **P.** CANARIENSIS, L. Canary-Grass.

Occasionally found in waste places.

*1552. **P. arundinacea,** L. Reed Canary-Grass. Th.

Borders of streams. "Var. *picta*, the leaves striped with white, is the familiar ribbon-grass of the garden,"—Gray's Manual. Ann Arbor,—Prof. M. W. Harrington; S. Mich.,—Winch. Cat.; Macomb Co.; Flint; Hubbardston; northward to L. Superior,—Whitney Cat.

486. ANTHOXANTHUM, L. SWEET VERNAL-GRASS.

*1553. **A.** ODORATUM, L.

Ionia; Grand Rapids,—Coleman Cat; well established on the College lawn. Rare.

487. HIEROCHLOE, Gmelin. HOLY GRASS.

1554. **H. borealis,** Roem. & Schultes. Vanilla or Seneca Grass. Th.

Not confined to the shores of the Great Lakes; rarely found in the central part of the State at Ionia; Hubbardston; Macomb Co.; Flint; S. E.,—Winch. Cat., etc. More common northward.

488. ARISTIDA, L. Triple-awned Grass.

1555. **A. purpurascens,** Poir. C. & S.

S. Mich.,—Winch. Cat.; Flint; Macomb Co. Infrequent.

489. STIPA, L. Feather-Grass.

1556. **S. avenacea,** L. Black Oat-Grass. Th.

S. W.,—Wright Cat.; South Haven,—Bailey; Baldwin; Dundee; Cass Co.; Point aux Pins,—Macoun, Can. Cat. Infrequent.

* 1557. **S. spartea,** Trin. Porcupine Grass. Th.

Dry plains. S. Mich,—Wright Cat.; Macomb Co.; shore of Woodward Lake, Ionia Co.; hills along Grand River near Ionia.

490. ORYZOPSIS, Michx. Mountain Rice.

* 1558. **O. melanocarpa,** Muhl. C. & S.

Woods. S. Mich.,—Wright Cat.; S. Haven; Macomb Co.; Flint; Hubbardston. Infrequent.

* 1559. **O. asperifolia,** Michx.

Hillsides. Common.

1560. **O. Canadensis,** Torr. Th.

Sterile soil. S. E.,—Wright Cat.; Hubbardston; Montcalm Co; Macomb Co.; common in Clare Co.; frequent from Ionia northward.

491. MILIUM, Tourn. Millet-Grass.

* 1561. **M. effusum,** L. Th.

Woods. Frequent.

492. MUHLENBERGIA, Schreber. Drop-seed Grass.

* 1562. **M. glomerata,** Trin. Th.

Marshes. Infrequent.

* 1563. **M. Mexicana,** Trin. Th.

Low grounds. Variable. Frequent.

* 1564. **M. sylvatica,** Torr. & Gray. Th.

Hubbardston; Flint; Lake Superior,—Agassiz. Frequent.

* 1565. **M. Willdenovii,** Trin. C. & S.

Woods. Flint; Macomb Co.; S. Mich.,—Wright Cat. Rare.

* 1566. **M. diffusa,** Schreber. Nimble Will. C. & S.

Open woods, becoming frequent around dwellings. S. Mich.,—Wright Cat.; So. Haven,—Bailey; Flint; Hubbardston.

493. BRACHYELYTRUM, Beauv.

* 1567. **B. aristatum,** Beauv. Th.

Woods. Frequent.

494. PHLEUM, L. Cat's-tail Grass.

* 1568. **P.** pratense, L. Timothy. Herd's-Grass.

Meadows everywhere.

1569. **P. alpinum,** L.

L. Superior,—Whitney Cat.

495. ALOPECURUS, L. Foxtail Grass.

1570. **A.** pratensis, L. Meadow Foxtail.

L. Superior,—Whitney Cat. Sparingly cultivated.

[S. Richardsonii, Link.

N. shore of L. Superior,—Macoun. May be looked for within our limits.]

1571. **A.** GENICULATUS, L. Floating Foxtail.

S. Mich.,—Wright Cat.; Macomb Co.

*1572. var. **aristulatus,** Torr. Th.

In water. Frequent.

496. SPOROBOLUS, R. Br. DROP-SEED GRASS. RUSH-GRASS.

1573. **S. vaginæflorus,** Vasey. C. & S.

Flint; Detroit,—Dr. A. B. Lyons. Rare.

1574. **S. cryptandrus,** Gray. C. & S.

S. Mich.,—Winch. Cat.; Point Edward, River St. Clair, Macoun; Bay City,—Dr. Beal; shore of Gull Lake, Augusta, Kalamazoo Co. Infrequent.

1575. **S. serotinus,** Gray.

Sandy wet places,—Gray's Manual; Keweenaw Co.,—F. Rare.

497. AGROSTIS, L. BENT-GRASS.

*1576. **A.** ALBA, L. Fiorin or White Bent-Grass. Red Top.

Naturalized from Europe. A common pasture and meadow grass.

*1577. var. VULGARIS, Thurb. Red Top.

Naturalized from Europe.

*1578. **A. perennans,** Tuckerman. Thin-Grass.

Swamps and damp woods. S. Mich.,—Wright; Macomb Co.; Hubbardston. Infrequent.

*1579. **A. scabra,** Willd. Hair-Grass. Th.

Sterile soil. Common.

*1580. **A. canina,** L. Brown Bent-Grass.

Ann Arbor.—Winch. Cat.; Ronald, Ionia Co. Infrequent.

498. CINNA, L. WOOD REED-GRASS.

*1581. **C. arundinacea,** L. Th.

Low grounds. Frequent.

1582. **C. pendula,** Trin.

Wet woods throughout. N. shore of Lake Superior,—Agassiz.

499. APERA, Adans.

*1583. **A.** SPICA-VENTI, Beauv.

College lawn.

500. CALAMAGROSTIS, Adans. REED BENT-GRASS.

*1584. **C. Canadensis,** Beauv. Blue-Joint.

This is a very valuable grass to the lake settlers (U. P.), rarely of many acres in extent. It is cut and stacked in August, and in winter is hauled home by sled or dog-train. It is greedily eaten by cattle. If cut early, the hay is of better quality. It grows shoulder-high, so that even a small meadow furnishes a great store of hay,—Whitney Cat., in 1851.

1585. **C. stricta,** Trin. Th.

Flint,—Dr. D. Clark; and northward to L. Superior,—Gray. Rare.

1586. **C. Lapponica,** Trin.

Isle Royale, Lake Superior,—T. C. Porter.

1587. **C. longifolia,** Hook. Th.

Sand dunes along L. Michigan. S. Haven,—Bailey; Petoskey; Point au Chene,—Winch. Cat.; Oscoda.

[S. HETEROLEPIS, Gray.

East side of La Cloche Island, Georgian Bay,—R. Bell, Canadian Catalogue.]

[C. LANGSDORFFII, Trin.

Lake Superior,—Macoun.]

501. AMMOPHILA, Host. Sea Sand-Reed.

1588. **A. arundinacea**, Host. N. & U. P.

This is one of the few plants found both on the ocean and the shores of the Great Lakes. Petoskey; Point au Chene,—Winch. Cat. Infrequent.

502. ARRHENATHERUM, Beauv. Oat-Grass.

*1589. **A. avenaceum**, Beauv.

Macomb Co., etc. Escaped from cultivation.

503. DESCHAMPSIA, Beauv.

1590. **D. flexuosa**, Trin. Common Hair-Grass.

Oscoda; Baldwin, to Lake Superior,—Macoun.

*1591. **D. cæspitosa**, Beauv. Th.

In bogs. Frequent.

504. TRISETUM, Persoon.

1592. **T. subspicatum**, Beauv., var. **molle**, Gray. U. P.

Marquette,—E. J. Hill; Whitney's Cat. Common.

505. AVENA, Tourn. Oat.

*1593. **A. striata**, Michx. Oat-Grass. Th.

Woods. Infrequent.

1594. **A. Smithii**, Porter. (**Melica Smithii**, Vasey.)

Keweenaw Point; Isle Royale,—Dr. Robbins, in Gray's Man.; woods near Sault de Ste. Marie,—C. E. Smith; shore of Crystal Lake, Benzie Co.,—L. H. Dewey; Vanderbilt, Otsego Co.

506. DANTHONIA, DC. Wild Oat-Grass.

*1595. **D. spicata**, Beauv. Th.

Sterile soil. Frequent.

1596. **D. intermedia**, Vasey.

Keweenaw Co.,—F.

507. BOUTELOUA, Lagasca. Muskit-Grass.

1597. **B. racemosa**, Lag. Grama Grass.

Dry plains. S. Mich.,—Wright Cat.; Macomb Co. Rare.

508. ELEUSINE, Gaertn. Crab-Grass. Yard-Grass.

*1598. **E. Indica**, Gaertn. Dog's-tail or Wire Grass. S. & C.

Ionia Co.; South Haven,—Bailey; S. Mich.,—Wright Cat. Infrequent.

509. TRIODIA, R. Br.

1599. **T. cuprea**, Jacq. Tall Red-top. S. E.

S. Mich.,—Wright's Cat.

510. PHRAGMITES, Trin. Reed.

*1600. **P. communis**, Trin. Th.

Swamps. Infrequent.

511. KŒLERIA, Pers.

*1601. **K. cristata**, Pers. Th.

Dry hills. Frequent.

512. EATONIA, Raf.

*1602. **E. obtusata**, Gray.

S. E.,—Wright Cat.; Flint; Hubbardston, northward. Rare.

*1603. **E. Pennsylvanica,** Gray. Th.

Moist woods., Common.

*1604. **E. Dudleyi,** Vasey.

Hubbardston.—Wheeler. Rare.

513. ERAGROSTIS, Beauv.

*1605. **E. reptans,** Nees.

Gravelly borders of streams. Common.

*1606. **E.** MAJOR, Host.

Waste places and gardens,—a common weed.

1607. **E.** PILOSA, Beauv. S.

Grand Rapids,—Coleman's Cat.; Macomb Co.

*1608. **E. Frankii,** Meyer. C. & S.

Roadsides in low ground. Hubbardston; Gratiot Co., etc.; Grand Rapids. Frequent.

1609. **E. capillaris,** Nees.

Coleman's Cat.; S. Mich.,—Wright Cat.; Ann Arbor,—M. W. Harrington. Rare.

1610. **E. pectinacea,** Gray., var. **spectabilis,** Gray. C. & S.

Dry sandy ground. S. Mich.,—Wright Cat. Reaches its northern limits at Howard City. Infrequent.

514. DIARRHENA, Raf.

1611. **D. Americana,** Beauv. S.

S. Mich.,—Wright Cat.; Flint; Hubbardston. Reaches its northern limits in Ionia Co. Rare.

515. DACTYLIS, L. ORCHARD GRASS.

*1612. **D.** GLOMERATA, L.

A valuable grass for pasture and hay; becoming naturalized.

516. POA, L. MEADOW-GRASS. SPEAR-GRASS.

*1613. **P.** ANNUA, L. Low Spear-Grass. Th.

Low grounds. Common.

*1614. **P.** COMPRESSA, L. Wire-Grass. Blue-Grass. English Blue Grass. Th.

Dry fields. Nutritious and would make good hay if it could be grown in quantity. Common.

1615. **P. alpina,** L. U. P.

Isle Royale,—C. G. Loring, Jr., in Gray's Manual; Keweenaw Co.,—F.

1616. **P. nemoralis,** L. (**Poa cæsia,** Smith and **P. cæsia,** var. **strictior,** Gray.)

Throughout N. Mich. Infrequent except in the Lake Superior region.

*1617. **P. serotina,** Ehrh. False Red-top. Fowl Meadow-Grass. Th.

Wet meadows, where it is a valuable grass—sometimes mistaken for Red-top, *Agrostis vulgaris.*

*1618. **P. pratensis,** L. Kentucky Blue Grass. June Grass. Th.

Pastures and meadows. Our most valuable pasture grass; not of much value for hay. Blossoms in June.

1619. **P.** TRIVIALIS, L. Roughish Meadow-Grass.

S. Mich.,—Wright Cat.; Flint. Sparingly in cultivation.

*1620. **P. sylvestris,** Gray. C. & S.

Low woods. S. Mich.,—Winch. Cat.; Flint; Hubbardston. Rare.

*1621. **P. debilis,** Torr. Th.

Hillsides. S. Mich.,—Winch. Cat.; Macomb Co.; Hubbardston to N. shore of Lake Superior,—Macoun. Infrequent.

*1622. **P. alsodes**, Gray. L. P.

Banks of brooks. Flowering early. Flint; Hubbardston; Inland, Grand Traverse Co. Infrequent.

1623. **P. flexuosa**, Muhl.

Swamps. Hubbardston; Constantine,—Wheeler; Flint,—Dr. Clark. Rare.

517. GRAPHEPHORUM, Desv.

*1624. **G. melicoideum**, Desv. Th.

River banks. Macomb Co.; Flint; Hubbardston; Petoskey; Grand Detour, Upper Michigan,—Prof. Porter. Rare south. Abundant at Pic River,—Macoun.

1625. var. **majus**, Gray.

Swamps. Hubbardston; Washington, Macomb Co.; Montcalm Co.

518. GLYCERIA, R. Br. Manna-Grass.

*1626. **G. Canadensis**, Trin. Rattlesnake-Grass. Th.

Borders of marshes. S. W.,—Winch. Cat.; Flint; Ionia Co. Infrequent.

*1627. **G. nervata**, Trin. Th.

Vary variable. Woods and wet meadows.

*1628. **G. pallida**, Trin. S.

Wet places. Constantine,—Wheeler; Keweenaw Co.,—F. Rare.

*1629. **G. grandis**, Watson. Th.

Common.

*1630. **G. fluitans**, R. Br. Th.

Shallow water. Common.

519. FESTUCA, L. Fescue-Grass.

*1631. **F. tenella**, Willd. Th.

Dry grounds. Infrequent.

*1632. **F. ovina**, L. Sheep's Fescue. Th.

Dry grounds. Common.

1633. var. **duriuscula**, Koch. Th.

S. Mich.,—Wright Cat.; Petoskey; Keweenaw Co.,—Robbins; Isle Royale,—Gillman. Sparingly in cultivation.

*1634. **F. nutans**, Willd. L. P.

Woods. Frequent.

*1635. **F.** ELATIOR, L. Taller or Meadow Fescue.

Meadows. Not common.

*1636. var. PRATENSIS, Gray. Meadow Fescue.

Kalamazoo,—Tuthill; Hubbardston. Not common.

520. BROMUS, L. Brome-Grass.

*1637. **B. Kalmii**, Gray. Wild Chess.

Dry open woods. S. E.,—Wright's Cat.; Flint; Macomb Co.; Hubbardston; northward to Quinnesec, —E. J. Hill. Infrequent.

*1638. **B.** SECALINUS, L. Cheat or Chess. Th.

Fields. Too common in wheat fields. There is a wide-spread notion, among farmers, that wheat changes or degenerates into this grass. It is needless to say that it is wholly without foundation. Often as many as thirty well-developed stalks grow from a single grain in rich soil, each stalk maturing a hundred grains or more. It is perhaps the worst intruder in our wheatfields. This grass seldom troubles the better class of farmers.

*1639. **B. ciliatus**, L. Th.

Moist woods. Very variable.

*1640. **B.** ASPER, L.

Gray's Manual.

1641. **B. breviaristatus,** Thurb.

First collected on low sand dunes near Bay View, in August, 1879, by C. F. Wheeler. In June, 1881, Prof. V. M. Spalding also collected this species near Charlevoix. The farthest station east known for this grass.

521. LOLIUM, L. DARNEL.

1642. **L. PERENNE,** L. Common Darnel. Ray-or Rye-Grass.

Macomb Co.,—Dr. Cooley; Ionia Co., etc. Scarcely naturalized.

1643. **L. TEMULENTUM,** L. Bearded Darnel.

Scarcely naturalized. Flint; Macomb Co.; S. Mich.,—Wright Cat.

522. AGROPYRUM, Gaertn.

*1644. **A. repens,** Beauv. Couch-Quitch-Quick-or Quack-Grass. Th.

Cultivated grounds. Varies greatly. Sometimes grows to the exclusion of everything else, and is widespread enough to be considered a pest.

1645. **A. dasystachyum,** Vasey. N. & U. P.

Common at Petoskey; N. W.,—Winch. Cat.; Oscoda and the sandy shores of the great lakes.

1646. **A. violaceum,** Lange.

Keweenaw Peninsula,—Farwell; Lake Superior,—Porter.

*1647. **A. caninum,** R. & S. Awned Wheat-Grass. Th.

S. Mich.,—Winch. Cat.; Macomb Co.; Hubbardston; northward.

523. HORDEUM, Tourn. BARLEY.

*1648. **H. jubatum,** L. Squirrel-tail Grass. Th.

Sands. N. shore of Lake Superior,—Agassiz; Sault de Ste. Marie,—R. Bell; Bay City. Infrequent.

524. ELYMUS, L. LYME-GRASS. WILD RYE.

*1649. **E. Virginicus,** L. Th.

River banks. A glaucous form occurs on the banks of Cedar River, college grounds. Common.

*1650. **E. Canadensis,** L. Th.

River banks. Common.

*1651. var. **glaucifolius,** Gray.

Ionia Co.; Specimens from banks of Red Cedar River, Lansing, measured six feet, with leaves one inch wide.

*1652. **E. striatus,** Willd. Th.

S. Mich.,—Wright Cat.; Flint; Hubbardston; northward to L. Superior.

var. **villosus,** Gray.

Flint,—D. Clark.

1653. **E. Sibiricus,** L., var. **Americanus,** Gray. U. P.

Marquette,—Porter in Gray's Manual; Keweenaw Co.,—F.

1654. **E. mollis,** Trin.

Shores of the Great Lakes,—Gray's Manual; north shore of Lake Superior,—Agassiz.

525. ASPRELLA, Willd.

*1655. **A. Hystrix,** Willd. Bottle-brush Grass. Th.

Moist woods. A variety of this grass is found in one locality near Hubbardston with smooth and very glaucous culms, leaves rough, hairy.

CIX. CONIFERÆ. PINE FAMILY.

526. PINUS, Tourn. PINE.

*1656. **P. Strobus,** L. White Pine. Th.

Hamburgh, Livingston Co., in the center of the State and northward. Follows the shore of L. Michigan to the Indiana line. Found in a swamp near Constantine. Usually 3 to 4 feet in diameter and 100 feet high, but often larger. Furnishes most of the pine lumber of commerce. The tallest white pine *we have measured* was 134 feet, and the largest diameter, scant 6 feet. Much taller and larger specimens are reported by lumbermen.

1657. **P. Banksiana,** Lambert. Gray or Northern Scrub Pine. Jack Pine.

In the western part of the State, noticed as far south as Grand Haven. Occurs at south end of Lake Michigan in Indiana; "Sand Pt., Saginaw Bay, and northward along the shore of L. Huron, not common," —Winch. Cat. In the central part of the State this pine is first seen in the northern part of Clare Co., where it is common in groves on sandy barrens. Trees sometimes grow 50 to 70 feet in height and rarely have been measured with a diameter of two feet.

1658. **P. resinosa,** Ait. Red Pine. Norway Pine.

Dry woods. First noticed in Isabella Co., in center of the L. P.; very abundant in Clare Co., and northward. "Frequent on low, sandy plains in U. P., where it forms orchard-like groves."—Whitney. Usually 100-110 feet high. On the east side of the State extends southward to Port Huron,—C. K. Dodge.

527. PICEA, Link. Spruce.

*1659. **P. nigra,** Link. Black Spruce. Th.

Frequent northward, and occasional south,—a small tree in sphagnous swamps. The following species is more common northward.

1660. **P. alba,** Link. White Spruce. N. & U. P.

From Ludington to Alcona Co.,—Dr. Beal; Petoskey and northward. Common.

528. TSUGA, Carrière. Hemlock.

*1661. **T. Canadensis,** Carrière. Th. except S. E.

Grand Ledge. Rarely seen south of latitude 43° except west, and scarce on the Huron shore, but common on the east shore of L. Michigan, and from the central part of the State northward. Very abundant and of great size in Emmett Co. Bark an article of commerce, used for tanning.

529. ABIES, Link. Fir.

1662. **A. balsamea,** Miller. Balsam or Balm-of-Gilead Fir. N. C. & U. P.

Frequent in the northern part of Clare Co.; abundant at Petoskey, and northward.

530. LARIX, Tourn. Larch.

*1663. **L. Americana,** Michx. American or Black Larch. Tamarack. Hackmatack. Th.

Swamps. A slender tree southward, but sometimes reaching 100 feet in height northward, where t is abundant.

531. THUYA, Tourn. Arbor Vitæ.

1664. **T. occidentalis,** L. Arbor Vitæ. White Cedar. Th.

Very common northward. Timber very durable, much used for fence posts, etc.

532. JUNIPERUS, L. Juniper.

*1665. **J. communis,** L. Common Juniper. Th.

Occasional throughout, along the highest grounds.

1666. **J. Sabina,** L., var. **procumbens,** Pursh. N. & U. P.

Abundant, trailing over low sand dunes at the head of Little Traverse Bay; Old Mission,—W. J. Beal, and northward.

*1667. **J. Virginiana,** L. Red Cedar. Savin. Th.

Bluffs and sterile soil. Throughout, but scarce.

533. TAXUS, Tourn. Yew.

*1668. **T. Canadensis,** Willd. American Yew. Ground Hemlock.

Moist woods in the shade of evergreens. Along the east shore of Lake Michigan as far south as S. Haven,—Bailey; Macomb Co., where it is rarely found. Common northward.

CX. EQUISETACEÆ. Horsetail Family.

534. EQUISETUM, L. Horsetail. Scouring Rush.

*1669. **E. arvense,** L. Common Horsetail. Th.

Damp, sandy grounds. Common.

1670. var. **campestre,** Milde.

Keweenaw Co.,—F.

*1671. **E. pratense,** Ehrh. Th.

Macomb Co.; Flint; to Pine Lake, Emmet Co.,—Winch. Cat. Rare.

*1672. **E. sylvaticum,** L. Th.

Ann Arbor, rare,—Allmend. Cat.; Clinton Co.; Montcalm Co.; Flint and northward where it is common.

1673. **E. palustre,** L. U. P.

Lake Huron to the Arctic sea,—(Hook. Fl.)

1674. **E. littorale,** Kühlewein.

New Buffalo; Oscoda; Keweenaw Co.,—F.

*1675. **E. limosum,** L. Th.

In shallow water. Common.

1676. var. **polystachyum,** Brückner.

Keweenaw Co.,—Farwell.

*1677. **E. hyemale,** L. Scouring-Rush. Shave-Grass. Th.

Wet banks. Common.

1678. **E. variegatum,** Schleicher. Th.

S. E.,—Winch. Cat.; Hubbardston; Muir; Macomb Co.; Flint; sand dunes at the head of Little Traverse Bay; Drummond's I., etc.; Port Huron,—C. K. Dodge. Infrequent.

1679. **E. scirpoides,** Michx. Th.

Macomb Co.; Flint; Hubbardston; Petoskey; to L. Superior,—Whitney Cat.

CXI. FILICES. FERNS.

535. POLYPODIUM, L. POLYPODY.

*1680. **P. vulgare,** L. Th.

Dry banks and rocks. Grand Ledge,—Dr. Beal; Hubbardston, etc. Rarely seen in L. P., but very common in U. P.

536. ADIANTUM, L. MAIDENHAIR.

*1681. **A. pedatum,** L. Th.

Rich, moist woods. One of our most beautiful ferns. Common.

537. PTERIS, L. BRAKE OR BRACKEN.

*1682. **P. aquilina,** L. Common Brake. Th.

Thickets. Common.

538. PELLÆA, Link. CLIFF-BRAKE.

1683. **P. gracilis,** Hook. U. P.

Louse Is.,—Winch. Cat.; Pictured Rocks,—G. H. Hicks.

1684. **P. atropurpurea,** Link.

Shaded limestone rocks. N. E.,—Winch. Cat.

539. CRYPTOGRAMME, R. Brown. ROCK-BRAKE.

1685. **C. acrostichoides,** R. Br. U. P.

Isle Royale,—Gray's Manual; Caribou Island,—Porter.

540. WOODWARDIA, Smith. CHAIN-FERN.

*1686. **W. Virginica,** Smith. Th.

Marshes. Marquette Co.,—Burt MS. Cat.; Westville, Montcalm Co.; Macomb Co.; Flint; So. Haven,—Bailey; Hubbardston; Ann Arbor,—Allmend. Cat.

1687. **W. angustifolia,** Smith.

The only known locality for this fern in Michigan is at South Haven, where it was detected in 1880 by L. H Bailey, Jr.

541. ASPLENIUM, L. Spleenwort.

1688. **A. Trichomanes, L.** N. & U. P.

N. E.,—Winch Cat.; Keweenaw Point; Isle Royale,—Porter. Infrequent.

1689. **A. ebeneum, Ait.**

Allegan,—Miss Josie A. Williams. Only station known in the State.

1690. **A. Ruta-muraria, L.**

N. E.,—Winch. Cat.; Keweenaw Co.,—F. Rare.

*1691. **A. angustifolium, Michx.** C. & S.

Rich woods. S. W.,—Wright Cat.; Ann Arbor, rare,—Allmendinger Cat.; Flint; S. Haven,—Bailey; Ionia Co. Infrequent.

*1692. **A. thelypteroides, Michx.** Th.

Rich woods. Frequent.

*1693. **A. Filix-fœmina, Bernh.** Th.

Moist woods. Exceedingly variable. Common.

542. CAMPTOSORUS, Link. Walking-Leaf.

1694. **C. rhizophyllus, Link.**

Keweenaw Co.,—F.; occurs in N. Ohio, and at Owen Sound, Ont. Reported from Alpena,—Prof. V. M. Spalding.

543. PHEGOPTERIS, Fée. Beech Fern.

*1695. **P. polypodioides, Fée.** Th.

Isle Royale,—Dr. A. B. Lyons; Keweenaw Co.,—F.; Frankfort; Inland, Grand Traverse Co.; rocks, Grand Ledge. Abundant northward.

*1696. **P. hexagonoptera, Fée.** Th.

Beech woods. Flint; Hubbardston; Ann Arbor,—Allmendinger Cat.; Keweenaw Co.,—F. Frequent.

*1697. **P. Dryopteris, Fée.** Th.

Open woods. Frequent n. of lat. 43°, especially under pines.

544. ASPIDIUM, Swartz. Shield Fern.

*1698. **A. Thelypteris, Swartz.** Th.

Swamps. Frequent.

*1699. **A. Noveboracense, Swartz.** L. P.

Swamps. Ann Arbor,—Allmendinger Cat.; Macomb Co.; Hubbardston; Gore Bay, Manitoulin Island,—J. Bell, Canadian Cat.

1700. **A. fragrans, Swartz.** U. P.

Crevices of shaded cliffs. Isle Royale, and Keweenaw Peninsula,—Dr. Lyons.

*1701. **A. spinulosum, Swartz.** Th.

Shady woods. Flint; Hubbardston; L. Superior,—D. C. Eaton, Ferns of N. A.

*1702. var. **intermedium, D. C. Eaton.** Th.

Woods. Common.

1703. var. **dilatatum, Hook.** Th.

Woods. Ann Arbor,—Allmendinger Cat.; Macomb Co.; Flint; Hubbardston; Petoskey, and northward.

1704. **A. Boottii, Tuckerman.**

Alder thickets. Hubbardston; Ann Arbor,—Winch. Cat. Rare.

*1705. **A. cristatum, Swartz.** Th.

Swamps. Frequent.

*1706. var. **Clintonianum, Eaton.** Th.

Ann Arbor,—Allmendinger Cat.; Hubbardston. Found at Lake Nipigon, Ont.,—Macoun. Infrequent.

*1707. **A. Goldianum**, Hook. C. & S.
Moist woods. Flint; Hubbardston; Owosso,—G. H. Hicks. Rare.

1708. **A. Filix-mas**, Swartz. Male-Fern. U. P.
Rocky woods. Keweenaw Peninsula, Lake Superior,—Gray.

*1709. **A. marginale**, Swartz. Th.
Hillsides in rich woods. S. Haven,—Bailey; Flint; Hubbardston and northward. Frequent.

*1710. **A. acrostichoides**, Swartz. Christmas Fern. Th.
Shady hillsides. Fronds evergreen, used for decoration. Common.

1711. **A. Lonchitis**, Swartz. U. P.
Woods. Southern shore of Lake Superior,—Prof. Whitney.

1712. **A. aculeatum**, Swartz., var. **Braunii**, Koch. U. P.
Ontonagon Peninsula,—Eaton's Ferns of N. A.; Keweenaw Co.,—F.

545. CYSTOPTERIS, Bernh. Bladder Fern.

*1713. **C. bulbifera**, Bernh. Th.
Moist shaded hillsides. Locally frequent.

*1714. **C. fragilis**, Bernh. Th.
Woods and river banks. Ann Arbor,—Allmend. Cat.; Flint; Hubbardston; northward to Lake Superior,—Whitney.

546. ONOCLEA, L.

1715. **O. sensibilis**, L. Sensitive Fern. Th.
Wet places. Abundant.

*1716. **O. Struthiopteris**, Hoff. Th.
Alluvial soil. Infrequent,

547. WOODSIA, R. Br.

1717. **W. Ilvensis**, R. Br. N. & U. P.
N. E.,—Winch. Cat.; Lake Superior,—Whitney Cat.; Lower Falls of the Quinnesec, -E. J. Hill,

1718. **W. hyperborea**, R. Br. U. P.
Keweenaw Co.,—F.

1719. **W. obtusa**, Torr. U. P.
Rocky places. Not rare.

1720. **W. Oregana**, D. C. Eaton. U. P.
Crevices of rocks south shore of Lake Superior,—Dr. Robbins in Gray's Manual.

548. DICKSONIA, L'Her.

1721. **D. pilosiuscula**, Willd. N. & U. P.
Petoskey, Emmet Co.,—Winch. Cat.; Keweenaw Co.,—F.

549. OSMUNDA, L. Flowering Fern.

*1722. **O. regalis**, L. Flowering Fern. Th.
Swamps. Common.

*1723. **O. Claytoniana**, L. Th.
Moist grounds. Common.

*1724. **O. cinnamomea**, L. Cinnamon Fern.
Swamps. Common.

[W. GLABELLA, R. Br.
Occurs on the north shore of Lake Superior, and may be looked for in our district.]

CXII. OPHIOGLOSSACEÆ. Adder's-Tongue Family.

550. BOTRYCHIUM, Swartz. Moonwort.

1725. **B. Lunaria,** Swartz. N. & U. P.

"Lake Superior (Lesquereux) and sparingly northward,"—Eaton in Gray's Manual; collected in 1888 at Harrisville by Dr. W. J. Beal. Rare.

1726. **B. simplex,** Hitchcock. N. & U. P.

Hillsides. Westward to Lake Superior,—D. C. Eaton, Ferns of N. Am.; near Oscoda in 1888—the only station known in the lower peninsula. Rare.

1727. **B. lanceolatum,** Angstroem. U. P.

Damp, mossy places. Lake Superior,—H. Gillman.

1728. **B. matricariæfolium,** Braun. U. P.

Dark, wet woods. Lake Superior.—D. C. Eaton; Keweenaw Co.,—F.

*1729. **B. ternatum,** Swartz, var. **intermedium,** D. C. Eaton.

Frequent.

*1730. var. **obliquum,** Milde.

Pastures and meadows. Fort Gratiot and S. Mich.,—Winch. Cat.; Flint; S. Haven,—Bailey; Ann Arbor,—Allmendinger Cat.; Gratiot Co. Infrequent.

1731. var. **dissectum,** Milde.

South Haven,—Bailey; Detroit,—Foerste.

*1732. **B. Virginianum,** Swartz. Th.

Rich woods. Variable. Common.

551. OPHIOGLOSSUM, L. Adder's-Tongue.

1733. **O. vulgatum,** L. U. P.

Keweenaw Co.,—F. Rare.

CXIII. LYCOPODIACEÆ. Club-moss Family.

552. LYCOPODIUM, L. Club-Moss.

1734. **L. Selago,** L. U. P.

Lake Superior,—Gray's Manual; Keweenaw Co.,—F. Infrequent.

*1735. **L. lucidulum,** Michx. Th.

Moist woods. Frequent.

1736. **L. inundatum,** L. Th.

Drummond's I., Willow river, Huron Co., Sugar Is.,—Winch. Cat.; Keweenaw Co.,—F.

1737. **L. annotinum,** L. N. & U. P.

Woods. Petoskey to L. Superior. Common.

*1738. **L. obscurum,** L. Th.

Moist woods. Common.

1739. var. **dendroideum,** D. C. Eaton.

Macomb Co.,—Cooley; Keweenaw Co.,—F.; Oscoda.

*1740. **L. clavatum,** L. Common Club-Moss. Th.

Dry woods. Common.

*1741. **L. complanatum,** L. Ground-Pine. Th.

Bangor, Van Buren Co.,—Bailey; shore of Pine lake; Woodward lake, Ionia Co.; Flint; Macomb Co. Stanton, and northward.

1742. var. **Chamæcyparissus,** D. C. Eaton.
Tp. of Arthur, Clare Co., May 15, 1849,—G. H. Cannon.

CXIV. SELAGINELLACEÆ.

553. SELAGINELLA, Beauv.

1743. **S. spinosa,** Beauv. U. P.
Isle Royale,—Dr. A. B. Lyons.

*1744. **S. rupestris,** Spring. Th.
Flint; Woodward Lake; rare in L. P., but common in U. P., Park Lake, Clinton Co.,—C. F. Wheeler; Oscoda; Grayling; Harrison,—Dr. Beal.

*1745. **S. apus,** Spring,
Ann Arbor,—Allmendinger Cat.; Hubbardston; Grand Ledge, 1891,—C. F. Wheeler. Infrequent.

554. ISOETES, L.

1746. **I. echinospora,** Dur., var. **Braunii,** Engelm.
Gray's Manual.

[I. LACUSTRIS, L. Quillwort.
River St. Marie at the head of the canal,—Macoun.]

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